S. Hrg. 101-45

FEDERAL ENERGY REGULATORY COMMISSION MEMBER TERM ACT OF 1989 AND ESTABLISHING THE POSITION OF ASSISTANT SECRETARY FOR NATURAL GAS IN THE DEPARTMENT OF ENERGY

HEARING

BEFORE THE

COMMITTEE ON ENERGY AND NATURAL RESOURCES UNITED STATES SENATE

ONE HUNDRED FIRST CONGRESS

FIRST SESSION

ON

S. 388

TO PROVIDE FOR FIVE-YEAR, STAGGERED TERMS FOR MEMBERS OF THE FEDERAL ENERGY REGULATORY COMMISSION, AND FOR OTHER PURPOSES

S. 389

TO AMEND THE DEPARTMENT OF ENERGY ORGANIZATION ACT TO ESTABLISH THE POSITION OF ASSISTANT SERCRETARY FOR NATURAL GAS, AND FOR OTHER PURPOSES

APRIL 17, 1989

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FEDERAL ENERGY REGULATORY COMMISSION MEMBER TERM ACT OF 1989 AND ESTABLISHING THE POSITION OF ASSISTANT SECRETARY FOR NATURAL GAS IN THE DEPARTMENT OF ENERGY

MONDAY, APRIL 17, 1989

U.S. SENATE,
COMMITTEE ON ENERGY AND NATURAL RESOURCES,
Washington, DC.

The committee met, pursuant to notice, at 2:05 p.m. in room SD-366, Dirksen Senate Office Building, Hon. Jeff Bingaman, presiding.

OPENING STATEMENT OF HON. JEFF BINGAMAN, U.S. SENATOR FROM NEW MEXICO

Senator BINGAMAN. Why don't we go ahead and start the hearing.

The purpose of the hearing is to consider two pieces of legislation that have been introduced this year, S. 388 and 389.

Due to the constraints of time, we have been unable to accommodate all the people who had wished to testify, and some of those who could not be scheduled have been encouraged to submit written statements, which we will incorporate into the hearing record.

S. 388, the Federal Energy Regulatory Commission Member Term Act of 1989, has been co-sponsored by our distinguished Chairman, Senator Johnston, and also by Senator Boren.

S. 388 would amend the Department of Energy Organization Act to create five-year staggered terms for the Commissioners of the Federal Energy Regulatory Commission. The legislation is intended to promote continuity of policymaking and experience of the Commissioners of this extremely important Federal agency that regulates the natural gas, electric power, and oil pipeline industries.

S. 389, is legislation to create an Assistant Secretary for Natural Gas within the Department of Energy, has been co-sponsored by Senator Boren. S. 389 is intended to promote the recognition in the Department's organizational structure of the significant part that natural gas can play in the nation's energy future.

The country faces an enormous shortfall in electric generating capacity, increasing dependence on imported oil, and likely new emissions controls on utility and industrial emissions. Natural gas can be a significant part of the solution to these challenges.

Within the Department of Energy, natural gas currently is the responsibility of the Assistant Secretary for Fossil Fuels. However, the programmatic and budget focus of the fossil fuels effort has been almost entirely in the areas of the coal programs and the strategic petroleum reserve. Obviously, coal is an important part of our energy resource base and clean and efficient utilization of our reserves of coal is important to the nation's energy and environmental future.

However, I believe there is cause for concern that natural gas has become the forgotten stepchild in the Department's fossil energy program.

It is important that natural gas be a factor in the Department of Energy's formulation of its comprehensive national energy policy and that natural gas receive departmental attention commensurate with the role that it can play in the nation's future.

Some of the questions we will be looking at are: Who within the Department is charged with the responsibility of ensuring that this role for natural gas is what it should be in carrying out the needs for clean air initiatives? Who is charged with ensuring that there is an adequate pipeline network?

Who is responsible for monitoring the maintenance of the nation's capability to produce natural gas in quantities sufficient to meet demand? Who is responsible for end use markets, where increased natural gas utilization can reduce the country's dependence upon imported petroleum?

Let me make one final announcement here. On May 8th the Subcommittee on Mineral Resources Development and Production will hold an oversight hearing on issues concerning natural gas production and pipeline capacity. We will be publishing notice of that hearing very shortly.

Now I will go to our first panel: John Tuck, who is the Under Secretary of the Department of Energy; and Ms. Catherine Cook, who is the General Counsel of the Federal Energy Regulatory Commission. Yes, please come up, Ms. Cook.

Why do we not start with Mr. Tuck. Go ahead if you would and summarize your statement, and then I will ask Ms. Cook to do the same and then we will have a few questions for each of you.

Thank you for coming today.

[The prepared statements of Senators Bingaman and McClure and the texts of the bills follow:]

OPENING STATEMENT
OF
SENATOR JEFF BINGAMAN
HEARING
ON
S. 388 and S. 389
April 17, 1989

The purpose of the hearing this afternoon is to consider two pieces of legislation that I have introduced, S. 388 and S. 389.

Due to time constraints, we have been unable to accomodate all of the parties that wished to testify today. Those who could not be scheduled to testify have been encouraged to submit written statements, which will be incorporated in the hearing record.

S. 388, the Federal Energy Regulatory Commission Member Term Act of 1989, has been cosponsored by the distinguished Chairman, Senator Johnston, Senator Boren and myself. S. 388 would amend the Department of Energy Organization Act to create five-year staggered terms for the Commissioners of the Federal Energy Regulatory Commission. This legislation is intended to promote continuity of policy making and experience of the Commissioners of this very important federal agency that regulates the natural gas, electric power, and oil pipeline industries.

S. 389, legislation to create an Assistant Secretary for Natural Gas within the Department of Energy, has been cosponsored by Senator Boren and myself. S. 389 is intended to promote recognition in the Department's organizational structure of the significant part that natural gas can play in our nation's energy future. The country faces a looming shortfall in electric generating capacity, increasing dependence on imported oil, and likely new emissions controls on utility and industrial emissions. Natural gas can be a significant part of the solution to each of these challenges.

Within the Department of Energy, natural gas currently is the responsibility of the Assistant Secretary for Fossil Fuels. However, the programmatic and budget focus of DOE's fossil energy efforts has been almost entirely in the areas of coal programs and the strategic petroleum reserve. While coal is an extremely important part of our energy resource base and the clean and efficient utilization of our abundant domestic reserves of coal is important to our nation's energy and environmental future, there is, I believe, cause for concern that natural gas has become the forgotten stepchild of the Department's fossil energy program.

It is important that natural gas be a factor in the Department of Energy's formulation of a comprehensive national energy policy and that natural gas receive Departmental attention commensurate with the role that natural gas can play in the nation's energy and environmental future. For example:

- Who within the Department is charged with responsibility for the role that natural gas can play in compliance with clean air initiatives that will likely be enacted?

- Who is charged with ensuring that there be an adequate pipeline network to move natural gas from producing areas to markets and to serve new markets that may not have adequate access to natural gas?

- Who is responsible for monitoring the maintenance of our nation's capability to produce natural gas in quantities sufficient to meet demand and the development of technologies to enhance the recovery of natural gas?

- Who is responsible for end use markets where increased natural gas utilization can reduce our nation's dependence upon imported petroleum?

In summary, the creation of an Assistant Secretary for Natural Gas would put responsibility for natural gas policy initiatives and research and development in one place and would assure more focused efforts directed at overcoming any barriers to the greater utilization of natural gas and the contributions that this fuel can make to the environment, energy security and cost-effective electric generation.

Finally, I would like to announce that on Monday, May 8, 1989, the Subcommittee on Mineral Resources Development and Production will hold an oversight hearing on issues concerning natural gas productions and pipeline capacity. Notice of this hearing will be published shortly.

Are there any other Members of the Committee who would like to offer opening statements?

I would now like to move to our first panel, the Honorable John Tuck, Under Secretary of the United States Department of Energy, and Ms. Catherine Cook, General Counsel of the Federal Energy Regulatory Commission.

Under Secretary Tuck, you may begin.

OPENING STATEMENT
SENATOR JAMES A. McCLURE (R-ID)
DOE REORGANIZATIONLEGISLATION
MONDAY, APRIL 17, 1989 (2:00 P.M.)

Good afternoon. There is a fundamental relationship between the structure of the Department of Energy and our national energy strategy.

The Department is responsible for management of Federal nuclear weapons production programs, for Federal energy research and development programs, for the Federal power marketing agencies, for uranium enrichment, and the DOE national laboratories. And over the years, the Secretary has, within certain statutory constraints, restructured the Department to meet changing national priorities.

During his confirmation hearings, Secretary Watkins indicated that he was faced with two priorities. One priority was to get a handle on management of the Department. The other priority was the development of a 5-year national energy strategy.

At the time, he indicated that his objective was to be able to reflect these priorities in the next budget cycle. However, it will not be an easy task to develop and implement such a long-term, comprehensive, and consensus-based strategy. Nevertheless, it is essential that we do so.

Therefore, I would urge that we should not only allow the Secretary sufficient time to formulate his recommendations for a management structure, but we also should provide him whatever flexibility he may need to organize the Department to address today's national energy priorities.

All fossil fuels are important to our national energy future, and responsibilities for natural gas now reside with the Assistant Secretary for Fossil Energy. This Assistant Secretary's additional responsibilities include other fossil fuels than natural gas such as coal, oil, tar-sands and oil shale. While I certainly think natural gas is an extremely important factor in our nation's energy mix, why natural gas should, at this time, be singled out for special attention is unclear. In the absence of a national energy strategy, similar arguments could be made for any specific energy conservation technology, or renewable energy, or coal, or oil.

The other measure pending before the Committee today addresses the terms of FERC Commissioners. We are all familiar with the problem that developed last year when FERC came close to not sustaining a quorum. Such a situation, if it had been allowed to occur, would not have been in the national interest. Perhaps the bill before us will avoid that possibility in the future and I look foward to reviewing this matter very closely to determine if our current system would indeed serve us better if changed in line with the legislation before us, S. 388.

Thank you, Mr. Chairman.

II

101st CONGRESS
1st Session

S. 388

To provide for five-year, staggered terms for members of the Federal Energy Regulatory Commission, and for other purposes.

IN THE SENATE OF THE UNITED STATES

February 8 (legislative day, January 3), 1989

Mr. Bingaman (for himself, Mr. Johnston and Mr. Boren) introduced the following bill; which was read twice and referred to the Committee on Energy and Natural Resources

---

A BILL

To provide for five-year, staggered terms for members of the Federal Energy Regulatory Commission, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the "Federal Energy Regulatory Commission Member Term Act of 1989".

SEC. 2. FIVE-YEAR TERMS FOR MEMBERS OF THE FEDERAL ENERGY REGULATORY COMMISSION.

(a) In General.—Section 401(b) of the Department of Energy Organization Act is amended by striking "four years" in the third sentence and inserting "five years".

(b) Staggered Terms.—Section 401(b) of such Act is amended by—

(1) inserting "(1)" after "(b)";

(2) striking the fourth, sixth, and seventh sentences; and

(3) adding at the end thereof the following:

"(2) Notwithstanding the provisions of paragraph (1), the terms of members first taking office after the date of enactment of the Federal Energy Regulatory Commission Member Term Act of 1989 shall expire as follows:

"(A) In the case of the member appointed to succeed the member whose term expires in 1989, such member's term shall expire on December 31 of the fourth year after the expiration of the predecessor's term.

"(B) In the case of members appointed to succeed members whose terms expire in 1991, one such member's term shall expire on December 31 of the third year after the expiration of the predecessor's term, and one such member's term shall expire on December 31 of the fourth year after the expiration of the predecessor's term, as designated by the President at the time of appointment.

"(C) In the case of members appointed to succeed members whose terms expires in 1992, one such member's term shall expire on December 31 of the fourth year after the expiration of the predecessor's term and one such member's term shall expire on December 31 of the fifth year after the expiration of the predecessors term.

"(D) Any member appointed to fill a vacancy occurring prior to the expiration for the term for which his predecessor was appointed shall be appointed only for the remainder of such term.".

(c) APPLICABILITY.—The amendments made by this section apply only to persons appointed or reappointed as members of the Federal Energy Regulatory Commission after the date of enactment of this Act.

II

101st CONGRESS
1st Session

S. 389

To amend the Department of Energy Organization Act to establish the position of Assistant Secretary for Natural Gas, and for other purposes.

IN THE SENATE OF THE UNITED STATES

February 8 (legislative day, January 3), 1989

Mr. Bingaman (for himself and Mr. Boren) introduced the following bill; which was read twice and referred to the Committee on Energy and Natural Resources

---

A BILL

To amend the Department of Energy Organization Act to establish the position of Assistant Secretary for Natural Gas, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That (a) section 203(a) of the Department of Energy Organization Act (42 U.S.C. 7133(a)) is amended by striking the word "eight" and inserting "nine" and by adding at the end of the subsection the following:

"(12) Functions relating to natural gas, including—

"(A) coordination of research and development;

"(B) coordination of Federal policy respecting natural gas imports, under the direction of the Secretary and in consultation with the Federal Energy Commission; and

"(C) coordination of Federal policy respecting exploration for and production, transmission and use of natural gas.".

(b) Section 203(b) of such Act (42 U.S.C. 7133(b)) is amended by striking the period at the end thereof and inserting ", except that one such individual shall be responsible only for the functions described in subsection (a)(12).".

○

STATEMENT OF JOHN C. TUCK, UNDER SECRETARY, DEPARTMENT OF ENERGY

Mr. TUCK. Thank you, Senator, very much. I am glad to be here. My statement is relatively brief, so if you will permit I will just go through it here.

I am pleased to have the opportunity to testify before the Committee on two pieces of legislation: S. 388, a bill to provide for five-year staggered terms for members of the Federal Energy Regulatory Commission; and S. 389, a bill to amend the Department of Energy Organization Act to establish the position of Assistant Secretary for Natural Gas. I will first address the proposed changes in Departmental organization, and then the proposed changes to the FERC.

S. 389 would establish an additional Assistant Secretary within the Department of Energy and assign that position with responsibility for functions relating to natural gas, including coordination of research and development, coordination of Federal policy with respect to natural gas imports, and coordination of Federal policy respecting exploration for and production, transmission and use of natural gas.

Speaking for Secretary Watkins and the Department of Energy, we agree with the need for a coordinated Federal policy on natural gas. Indeed, President Bush has stated that "natural gas is a key part of my energy policy for America."

The principal issue that we must address is a larger one than Federal natural gas policy. President Bush has articulated the real issue challenging all of us, and that is that the nation's "very survival depends upon a strong national energy policy."

Admiral Watkins has accepted the President's challenge. As he stated in his confirmation testimony: "I intend to function fully as the Secretary of Energy, and will be extremely active in all parts of Departmental management and policy development."

You, Senator, in the Senate have voted your confidence in his ability to meet that challenge by confirming his nomination as Secretary of Energy. Admiral Watkins will provide the leadership required to develop and to coordinate a comprehensive national energy strategy that achieves efficient production and use of all sources of energy, while meeting legitimate concerns of safety, health, and the environment.

One of the Department of Energy's first priorities is to develop a comprehensive, integrated energy strategy to be shared with the Congress. Through extensive consultations with the Congress, other Federal agencies, energy companies, consumer organizations, State and local governments and public interest groups, the Department will develop a comprehensive energy policy coupled with an integrated strategy for achieving policy goals.

As a part of the development of that strategy, we will evaluate the Department's current organizational structure and functions to determine the type of organization that would allow for the most efficient and effective implementation of the type of comprehensive energy strategy that the country requires.

Developing a well thought-out policy and strategy is going to require some time, and at this very early stage in this Administration's stewardship at the Department of Energy we are not ready to present a comprehensive proposal to the Congress.

Our preferred course of action at this juncture would be to complete our evaluation of the current DOE organizational structure and to decide what modifications would enhance our ability to achieve our mission. If those modifications require legislative changes, the Department would then consult with the Congress on those proposed changes to the Department of Energy Organization Act.

Let me emphasize at this point that the Department recognizes the very important contributions that natural gas can make to achieving our domestic energy strategy and environmental goals. In the beginning years of the Department of Energy, this statement was not a reflection of our Nation's energy policy.

Both in the Department and in the Congress, as well as within the gas industry itself, the concern was that we were running out of natural gas. But we have all grown wiser as we have witnessed the benefits of energy policies that promote efficient pricing, production, and use of our Nation's fuels.

We are pleased to see the bipartisan consensus that has recently emerged in support of deregulating all remaining natural gas wellhead prices.

The Department of Energy is taking a new initiative with respect to natural gas. To clear up some of the confusion partly due to past government policies, the Department was instrumental in providing a clear and reliable assessment of our natural gas base by the nation's leading gas experts. That report, released just about a year ago in May 1988, reported the experts' consensus that at current consumption rates we have a 35-year supply of natural gas at costs of less than three dollars per thousand cubic feet.

We expect to continue to update our natural gas resource base assessment on a periodic basis to counteract the confusion that arises from widely divergent estimates and erodes consumer confidence in natural gas. The Department is also conducting an alternative fuel study to assess the costs and benefits of natural gas as an alternative to oil as a transportation fuel.

Our Nation needs a balanced mix of secure fuels. No single fuel makes sense in every application. The Department of Energy believes the resources, the technologies and the market potential exist in North America to reduce the risk of insecure imported oil and increase reliance on secure North American resources, such as natural gas. You will see natural gas playing an important role in our future national energy policy.

Now I would like to make a brief comment about S. 388, a bill to provide for five-year staggered terms for members of the Federal Energy Regulatory Commission. The bill also would eliminate the current Department of Energy Organization Act provision allowing the period a Commissioner may serve after the expiration of his or her term.

The Department generally supports the policy of longer, staggered terms for FERC Commissioners. The benefits to be gained from this proposal include more continuity of FERC policies, programs, and activities, more experienced decisionmakers leading the agency, and a greater depth of FERC-related expertise among the Commissioners.

Consistent and experienced leadership are critical to ensuring effective and timely decisionmaking at the FERC, a government agency with responsibility for resolving important and complex regulatory issues.

It should be pointed out, however, that there is a cost associated with the benefits I have enumerated. The proposal to eliminate the period a Commissioner may serve after the expiration of his or her term means possibly this President, but certainly future Presidents, will not have the benefit of this flexibility.

Such flexibility could be useful to allow the Commission to continue to operate with full membership when a new member's nomination is delayed. Over time, however, such extensions could cause several Commissioners' terms to expire near the same time, and result in a situation similar to last year, when the majority of the Commissioner's terms were expiring on or about the same time.

We realize the intent of this bill is to avoid just such a situation. However, the Department believes that the flexibility of allowing Commissioners to serve an additional year should be retained. Accordingly, we would support modification to S. 388 as it is currently drafted.

Mr. Chairman, that completes my statement and I would be pleased to answer any questions that you may have or other members of the Committee may have at this time.

[The prepared statement of Mr. Tucker follows:]

Statement of
John Tuck
Under Secretary
U.S. Department of Energy
Before the
Committee on Energy and Natural Resources
U.S. Senate
April 17, 1989

I am pleased to have the opportunity to testify before the Committee on two pieces of legislation, S. 388, a bill to provide for five-year, staggered terms for members of the Federal Energy Regulatory Commission, and S. 389, a bill to amend the Department of Energy Organization Act to establish the position of Assistant Secretary for Natural Gas. I will first address the proposed changes in Departmental organization, and then the proposed changes to the FERC.

S. 389 would establish an additional Assistant Secretary within DOE, and assign that position with responsibility for functions relating to natural gas, including coordination of research and development, coordination of Federal policy with respect to natural gas imports, and coordination of Federal policy respecting exploration for and production, transmission and use of natural gas.

Speaking for Secretary Watkins and the Department of Energy, we agree with the need for a coordinated Federal policy on natural gas. Indeed, President Bush has stated that "natural gas is a key part of my energy policy for America." The principal issue that we must address is a larger one than Federal natural gas policy. President Bush has articulated the real issue challenging all of us -- that the Nation's "very survival depends on a strong national energy policy."

Secretary Watkins has accepted the President's challenge. As he stated in his confirmation testimony, "I intend to function fully as the Secretary of Energy, and will be extremely active in all parts of departmental management and policy development." You in the Senate have voted your confidence in his ability to meet that challenge by confirming his nomination as Secretary of Energy. Secretary Watkins will provide the leadership required to develop and coordinate a comprehensive national energy strategy that achieves efficient production and use of all sources of energy while meeting legitimate concerns of safety, health, and environment.

One of the Department of Energy's first priorities is to develop a comprehensive, integrated energy strategy to be shared with the Congress. Through extensive consultations with Congress, other federal agencies, energy companies, consumer organizations, state and local governments and public interest groups, the Department will develop a comprehensive energy policy coupled with an integrated strategy for achieving policy goals. As part of the development of that strategy, we will evaluate the Department's current organizational structure and functions to determine the type of organization that will allow for the most efficient and effective implementation of the type of comprehensive energy strategy we need.

Developing a well thought-out, comprehensive energy policy and strategy requires time, and at this very early stage in this Administration's stewardship at DOE, we are not ready to present a comprehensive proposal to Congress. Our preferred course of action would be to complete our evaluation of the current DOE organizational structure, and decide what modifications would enhance our ability to achieve our mission. If those modifications require legislative changes, the Department would then consult with the Congress on proposed changes to the Department of Energy Organization Act.

We share your concern over National energy policy and planning, and your desire to see results. This hearing today and the proposal before us to establish an Assistant Secretary for Natural Gas clearly sends the message that you are interested in seeing changes from the status quo in the Department of Energy regarding natural gas policy. I assure you we will be responsive to Congressional concerns and work with you to achieve our shared objectives within a national energy policy. This Nation has the right to expect a coordinated Federal natural gas policy from its government. Rather than solve our problems in a piecemeal fashion, as this bill would do by addressing the issue of natural gas in isolation, we in the Department of Energy request that you allow us the opportunity to develop a broad, agency-wide proposal to address our energy and organizational problems in an integrated fashion. I assure you that the proposal before us today, as well as other input the Congress wishes to provide, will be factored into our comprehensive analysis of the Department's overall organizational structure.

Let me emphasize at this point that the Department recognizes the important contributions that natural gas can make to achieving our domestic energy security and environmental goals. In the beginning years of the Department of Energy, this statement was not a reflection of energy policy. Both in the Department and in the Congress, as well as within the gas industry itself, the concern was that we were running out of natural gas. But we have all grown wiser as we have witnessed the benefits of energy policies that promote efficient pricing, production and use of our Nation's fuels. We are pleased to see the bipartisan consensus that has recently emerged in support of deregulating all remaining natural gas wellhead prices.

The Department of Energy is taking a new initiative with respect to natural gas. To clear up some of the confusion partly due to past government policies, the

Department was instrumental in providing a clear and reliable assessment of our natural gas base by the Nation's leading gas experts. That report, released in May 1988, reported the experts' consensus that at current consumption rates, we have a 35-year supply of natural gas at costs of less than $3.00 per thousand cubic feet. We expect to continue to update our natural gas resource base assessment on a periodic basis to counteract the confusion that arises from widely divergent estimates and erodes consumer confidence in natural gas. The Department is also conducting an alternative fuel study to assess the costs and benefits of natural gas as an alternative to oil as a transportation fuel.

Our Nation needs a balanced mix of secure fuels. No single fuel makes sense in every application. The Department of Energy believes the resources, the technologies, and the market potential exist in North America to reduce the risk of insecure imported oil and increase reliance on secure North American resources such as natural gas. You will see natural gas playing an important role in our future National energy strategy.

I would now like to make a brief comment about S. 388, a bill to provide for five-year, staggered terms for members of the Federal Energy Regulatory Commission. The bill also would eliminate the current Department of Energy Organization Act provision allowing the period a Commissioner may serve after the expiration of his or her term.

The Department generally supports the policy of longer, staggered terms for FERC Commissioners. The benefits to be gained from this proposal include more continuity of FERC policies, programs and activities; more experienced decisionmakers leading the agency; and a greater depth of FERC-related expertise among the

Commissioners. Consistent and experienced leadership are critical to ensuring effective and timely decisionmaking at the FERC, a government agency with responsibility for resolving important and complex regulatory issues. Under this proposal, it is likely there would be only one new Commissioner joining the FERC each year. Thus, only one member would be facing the FERC learning curve, and he or she would have four seasoned fellow Commissioners as a resource base.

It should be pointed out, however, that there is a cost associated with the benefits I have enumerated. The proposal to eliminate the period a Commissioner may serve after the expiration of his or her term means future Presidents will not have the benefit of this flexibility. Such flexibility could be useful to allow the Commission to continue to operate with full membership when a new member's nomination is delayed. Over time, however, such extensions could cause several Commissioners' terms to expire near the same time, and result in a situation similar to last year when the majority of Commissioners' terms were expiring on or about the same time. We realize the intent of this bill is to avoid just such a situation. However, the Department believes that the flexibility of allowing Commissioners to serve an additional year should be retained. Accordingly, we do not support S. 388 as drafted.

That completes my statement, Mr. Chairman. I will be pleased to answer any questions you or the other Committee members may have.

Senator BINGAMAN. Well, thank you very much, Mr. Tucker.

Let me ask Ms. Cook to go ahead and summarize your statement, if you could, before I ask questions.

STATEMENT OF CATHERINE C. COOK, GENERAL COUNSEL, FEDERAL ENERGY REGULATORY COMMISSION

Ms. COOK. Yes, Mr. Chairman. I appreciate the opportunity to appear before you to present testimony in support of S. 388, a bill to provide for five-year staggered terms for FERC Commissioners. I am appearing on behalf of FERC Chairman Martha O. Hesse and my remarks do not necessarily reflect the views of other individual Commissioners.

The Chairman supports this bill with the incorporation of the Department of Energy's recommendation that a one-year grace period be retained. Under current law, Commissioners serve full terms of four years, and they continue to serve until a successor takes office, up to one year after their terms have expired.

It is this one year period that I term a grace period. These terms, these present four-year terms, are only partially staggered, so that the terms of four Commissioners may expire within a two-year period. It is therefore theoretically possible that four Commissioners may be required to vacate their positions in the same year.

This situation could impair the proper functioning of a collegial body like the Commission, which is charged with both policymaking and adjudicatory duties. To serve the public well, the Commission's decisional process must be both flexible and orderly.

We must be flexible enough to deal with changing conditions. However, while our policies must continue to evolve, the public and the companies we regulate have a right to expect a certain degree of predictability and continuity in our decisions.

They have a right to expect Commission actions to proceed from certain common principles and to reflect our institutional memory. A fundamental reason for the creation of independent regulatory agencies was to provide for just such a process of orderly decisionmaking.

As mentioned earlier, the current law governing the terms of FERC Commissioners has the potential to create continuity problems. Last year, for example, two Commissioners were serving in their holdover year, two were about to have their terms expire, and one had resigned. Under these circumstances, it was difficult at times both to achieve a quorum and to reach a majority vote.

The Chairman supports S. 388 with the addition of a one-year grace period because she believes it would provide for greater continuity of decisionmaking at the Commission. Specifically, after a transition period, the bill would extend the terms of the Commissioners from four years to five, and would fully stagger the terms so that each term would expire in a different year.

The Chairman does not, however, recommend elimination of the one-year period a Commissioner may serve after the expiration. She supports DOE's recommendation that Congress retain this one-year grace period in order to prevent gaps in Commission membership when the term of one Commissioner has expired before a replacement has been confirmed.

It is true that keeping the holdover period leaves open the possibility that two Commissioners might be required to leave in the same year. Nevertheless, on balance retention of the grace period would enhance the continuity of the Commission's decisional process.

Five-year staggered terms for FERC Commissioners and the ability to serve for a holdover period would enhance the Commission's efforts to maintain both a flexible and an orderly decisional process. It would enable the Commission to assimilate the fresh outlook of new Commissioners and allow the new Commissioners to become comfortable with their new responsibilities, and it would reduce the disruption resulting from the loss of experienced members. It would, in short, maintain the stability and continuity of the administrative process.

In conclusion, we will be happy to provide any technical assistance you may need in the course of your deliberations on S. 388. I would be happy to try to answer any of your questions at this time.

Thank you.

[The prepared statement of Ms. Cook follows:]

STATEMENT OF

CATHERINE C. COOK

GENERAL COUNSEL

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COMMITTEE ON ENERGY AND NATURAL RESOURCES

UNITED STATES SENATE

ON S. 388

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Statement of Catherine C. Cook
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on S.388
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MR. CHAIRMAN AND MEMBERS OF THE COMMITTEE:

I appreciate the opportunity to appear before you this morning to present testimony in support of S. 388, a bill to provide for 5-year staggered terms for FERC Commissioners. I should emphasize that I am appearing on behalf of FERC Chairman Martha O. Hesse and my remarks do not necessarily reflect the views of other individual Commissioners.

Under current law (42 U.S.C. § 717(b)), Commissioners serve full terms of four years. These terms are only partially staggered so that the terms of four Commissioners may expire within a two-year period. In addition, Commissioners may continue to serve for up to one year after their terms have expired until a successor takes office. It is therefore theoretically possible that four Commissioners may be required to vacate their positions in the same year.

This situation has the potential to seriously impair the proper functioning of a collegial body like the Commission, which is charged with both policy-making and adjudicatory duties.

To serve the public well, the Commission's decisional process must be both flexible and orderly. We must be flexible enough to deal with changing conditions. However, while our policies must continue to evolve, the public and the companies we regulate have a right to expect a certain degree of predictability and continuity in our decisions. They have a right to expect Commission actions to proceed from certain common principles and to reflect our institutional memory. A fundamental reason for the creation of independent regulatory agencies was to provide for just such a process of orderly decisionmaking.

As mentioned earlier, the current law governing the terms of FERC Commissioners has the potential to create continuity problems. Last year, for example, the Commission faced a situation in which two Commissioners were serving in their holdover year, two were about to have their terms expire, and one had resigned. This circumstance could have seriously disrupted the Commission's operations. Indeed, it made it difficult sometimes to achieve a quorum for Commission business and, when a quorum was present, to reach a majority vote.

The Chairman supports S. 388 because she believes it would provide for greater continuity of decisionmaking at the Commission. Specifically, the bill would: (a) after a transition period, extend the terms of the Commissioners from four years to five, (b) fully stagger the terms so that each term expired in a different year, and (c) eliminate the period a Commissioner may serve after the expiration of his or her term.

This legislation would make the terms of FERC Commissioners comparable to those of members of the Nuclear Regulatory Commission. Current statutes also provide for 5 year, fully staggered terms for members of the Federal Communications Commission, Interstate Commerce Commission and Securities and Exchange Commission, and 7 year, fully staggered terms for members of the Federal Trade Commission. Unlike S. 388 and the law governing the NRC, however, these statutes permit Commissioners to serve for a holdover period after their terms have expired until a successor has been appointed and has qualified.

Five year staggered terms for FERC Commissioners would enhance the Commission's efforts to maintain both a flexible and an orderly decisional process. It would enable the Commission to assimilate the fresh outlook of new Commissioners -- and allow them to become comfortable with their new responsibilities -- while reducing the disruptions resulting from the loss of experienced members. It would, in short, maintain the stability and continuity of the administrative process.

In conclusion, we will be happy to provide any technical assistance you may need in the course of your deliberations on

S. 388. I would be happy to try to answer any of your questions at this time.

Senator **Bingaman**. Thank you very much.

John, first I would like to just ask you a question on this legislation on the terms of FERC Commissioners. You point out that the Department's position is that the provision in present law authorizing or providing that Commissioners can continue for an additional year is a desirable provision in your view and you would like to see that retained.

If that were retained, if we were to amend this bill to retain that and otherwise change the terms, stagger the terms, could we hope to get the Department of Energy's support for the bill?

Mr. **Tuck**. Yes, sir, you certainly could.

Senator **Bingaman**. Okay.

Ms. Cook, let me ask you about, on the FERC legislation, if you have an opinion, what would the consequences have been had the Commission lost its quorum last October? And specifically, I guess I am particularly concerned about pending applications before FERC to construct and operate facilities, to charge rates.

Applications for a rehearing are another sort of subset of that question. I gather that the rules at FERC presently provide that those applications are denied or deemed denied if they are not acted on within 30 days. What would have happened to them?

Ms. **Cook**. Well, what would have happened would be what was in house would have come to a halt for the most part. You are quite right that rehearing would have been deemed denied within 30 days.

Perhaps even more significantly, Mr. Chairman, I think what we would see, we would have seen had the FERC lost a quorum, would have been an abundance of new filings which would have gone into effect because the Commission would not have had the authority to toll them, and we would have seen rates go into effect and it would not have been within the Commission's control to deal with that.

Senator **Bingaman**. The Commission's rules presently provide that rates go into effect 30 days after the filing unless there is action by the Commission to suspend?

Ms. **Cook**. On the gas side, yes; and 60 days on the electric side.

Senator **Bingaman**. And you are saying that, had a quorum not been there, you would have seen a flurry of new filings in order to take advantage of the running of that time?

Ms. **Cook**. That certainly was my suspicion.

Senator **Bingaman**. All right. I appreciate those comments.

On the area of natural gas, Secretary Tuck, let me ask you a couple of questions about the Administration's clean air strategy. Do you know what the Department of Energy's involvement is going to be there in the area of natural gas?

What steps is the Department taking to include natural gas as part of its clean air strategy and to ensure that it is properly dealt with in any clean air legislation that moves this year?

Mr. **Tuck**. Those discussions, Senator, are heating up. They are becoming more frequent, and the Administration, as you know, is looking toward the introduction of its legislation in May at some point. The Department of Energy has been very much involved in those discussions and has been a player.

With regard to natural gas specifically, I am not presently aware of exactly what the Department's role has been in those discussions. I do know that the Secretary has spoken frequently of his desire to effect a national energy strategy, to coordinate across Department lines, across the general public lines, a policy that would involve both government and the private sector in looking at the entire energy policy of the country, to evolve a strategy, with a draft to be in hand approximately in the June-July time frame.

And in the context of the perfection of that strategy, the national strategy, I assure you that the Fossil Energy people in the Department of Energy certainly will be advancing the interests of natural gas.

Senator **Bingaman**. Let me ask you a question on Canadian natural gas imports. As you know, Secretary Tuck, the Canadian natural gas imports are not now a major part of the U.S. market. They are about seven percent of the U.S. market today.

But the information I have is that the trends associated with Canadian natural gas imports are a problem area. Let me be specific. In 1988 Canadian natural gas filled about 310 billion cubic feet or about 36 percent of the increase in U.S. natural gas consumption.

I understand that upon completion of Northeast Pipeline Projects presently going forward, Canadian natural gas will account for about 26 percent of the gas supplied to Northeast markets, which is up from about four percent at the present time.

In fact, about 60 percent of the new or incremental market created by expanded pipeline facilities will come from Canada.

I guess what I would like to know is whether you in the Department of Energy have some concern about this disproportionate capturing of our new markets by Canadian production at the expense of domestic production?

Mr. **Tuck**. We have heard the complaints of domestic producers and the Department will take a very hard look at how our domestic policies impact U.S. gas producers and determine whether the playing field is level.

But I might state in general that the Administration is fully in favor of free trade and that we support the recent Free Trade Agreement. We are certainly aware that Canadian imports have increased rather dramatically and that other jurisdictions' production has declined.

If we, after taking this close look that I have just described, determine that there is a problem, we will certainly take the appropriate action within the Department or make the appropriate recommendations to the FERC and/or, if necessary, to Congress in that regard.

Senator **Bingaman**. Okay. I would like to ask one other question and then defer to my colleagues for questions here, and then I may come back with one or two more.

The research and development budget in the Fossil Fuels area has been a real concern of mine. I gather that in 1989 the budget for R&D in this area, total budget, is about $380 million. The 1990 budget drops from $380 million to $163 million.

Those are the figures I have been given. Only about 2.5 percent of this proposed budget for 1990 relates to natural gas projects, and in fact only about 15 percent relates to petroleum projects at all.

I guess there seems to be a disproportionate emphasis on clean coal technology. About 65 percent of the R&D funds in this entire area go to clean coal projects separate and apart from the clean coal demonstration program.

Would you comment as to your view on this? It seems to me that there is a relatively small and decreasing attention to the possibilities of natural gas and to the research that is needed to develop those potentials. I would be interested in your thoughts on that.

Mr. TUCK. Senator, it is my understanding that the fiscal year 1989 appropriation was, exactly as you stated, approximately $383 million for Fossil Energy Research and Development, of which some 63 percent or $242.8 million was for coal and ten percent was for oil, and $11.38 million was for natural gas, or three percent. The remainder is in the area of management or overhead.

The fiscal year 1990 request of $166.21 million includes $107.81 million or 65 percent for coal, $24.55 million or 15 percent for oil, and $4.07 million or 2.4 percent for gas.

It should be noted that many of the coal utilization technologies also apply to natural gas. For example, the Fuel Cells and MHD and Indirect Coal Liquefication programs all contain technology activities of significant relevance to gas.

On the point with regard to the DOE budget overemphasizing clean coal technology, the program is an integral part of the Administration's acid rain legislative strategy, that is the Clean Coal Technology program. Consequently, the timing of the technology demonstration will be a very important factor in meeting reduction targets.

This program, the Clean Coal Technology program, involves full-scale demonstration projects, which are in and of themselves inherently quite expensive. Natural gas poses a much less significant environmental problem and does not require demonstration programs to the same degree that coal does.

Moreover, the Clean Coal Technology program is considering technologies like gas reburn and co-firing, which will use natural gas along with or together with coal.

The Department must commit to total funding of each project at the time of the initial cooperative agreement, that is for the clean coal technology. And a funds available—a "certain funds available" clause would not be acceptable to industrial partners and therefore they need the up-front assurance of our commitment to complete the project.

And that is why I think you see the kind of resources dedicated to clean coal technology in what you have alluded to as a relatively disproportionate fashion.

Senator BINGAMAN. Just to follow up just a moment, are you going to be able in the Department of Energy to both increase the R&D funding for this fossil fuels research and development and also shift some resources, so that natural gas begins to get some significant attention?

The 2.4 percent of the funds that you are presently planning to devote to natural gas strikes me as woefully inadequate.

Mr. TUCK. In 1989 it is my understanding that the total fossil Energy R&D request was $168 million, and that actually $381 million were appropriated. The request is roughly the same in FY 1990 on the total fossil energy R&D, of $165.2 million.

But I do note that the request for gas R&D in fiscal year 1990 for the Department and the Administration's budget is practically three times that of the request for 1989. Admittedly, it does not come up to the amount that was appropriated ultimately for gas of $11.38 million in 1989.

But there has been an increased emphasis on R&D for gas already reflected in the Administration's budget for fiscal year 1990.

Senator **Bingaman**. Let me defer to my colleagues here. Senator Domenici was here first.

STATEMENT OF HON. PETE V. DOMENICI, U.S. SENATOR FROM NEW MEXICO

Senator **Domenici**. Thank you, Mr. Chairman.

Let me just indicate in a general way, whatever we can do, Secretary Tuck, here on the Hill to stress the importance and the significance of natural gas in the United States, its production and its use, is going to get my support. I am not suggesting at this point that the only way to do that is the way expressed in this bill.

But frankly, I have become convinced in the past that, while the administrations in the past can support free trade and the immediate past Administration can support the Free Trade Agreement with Canada, that that does not mean that we have always had the kind of concern within the Department for the problems of natural gas in these United States.

Speaking from my own part of the country and more particularly a very large natural gas basin in the Four Corners area, we are always competing for the California market at this point. And as you must know, that is the apple of Canada's eye, and we do not always get what I consider to be a reasonably prompt assessment of what is going on.

We have by hook or crook got our message to various regulators regarding Canadian activities when we thought they were unfair. But frankly, I am concerned that things are not going to get better and that we ought to have some place for a very strong focus on natural gas.

I might suggest to you that there are three or four areas today that I would just like to call to your attention. One remains the transportation of natural gas. There is no question but that there is no easy solution to that because of the transportation network that exists, but let me tell you, middle America would be much better off if we could get natural gas out of some of the areas in the Rocky Mountains and New Mexico into those areas.

We would be better off, too, because any captive market does not do any good in this country. If you have large natural gas reserves that are captive to a consumer area, you do not come out with the best.

So I want to support that and indicate very strongly to you that I think it is the role of the Department of Energy to be concerned about that.

Secondly, I might suggest to you that as we move into a new Clean Air Act, as we move into a new Act to clean up some of middle America's smokestacks with reference to acid rain, I hope you are aware and the Department is aware that one of the things suggested to ameliorate the price of the cleanup is to do whatever is necessary in the legislation to permit natural gas to be used along with coal as part of the cleanup that is going to be required.

Now, I am not suggesting to you that that is an easy situation. But I do want to take this opportunity to stress that that is not solely an EPA mission. That is a joint Departmental mission, where the Department of Energy has a very important role to see to it that—well, I was going to say to see to it that they present a cleanup proposal that pleases the President.

I cannot imagine one that would please him more than to find that, instead of being rigidly tied to coal for coal cleanup, that we might present one that says you can use some natural gas in that acid rain cleanup.

And again I repeat myself. I am not sure we need a new secretarial position, but we surely need a major role in that regard.

I would just cite one more. In the United States today, a whole new reserve of natural gas is being produced from what is called coal seam gas. People might wonder why in the world is that happening. I can tell you why it is happening: because there is built into the tax code of this country a significant incentive to go find that gas, and it is being found in large, large quantities that otherwise would have been there probably to be geologically studied.

That cries out for some support for its continuation, the extension of that incentive, because without it I am very fearful, as are those doing the work, that the reserve add-ons will end.

So having said that, I choose to use this opportunity to impress upon you the fact that, while the Department of Energy has many roles and wears many hats, we, many of us, think that natural gas is one of the very exciting fuels of the future and that there might be a lot more of it out there than we thought ten years ago when we wanted to ration it.

And we need representation for fairness, for transportation fairness, to continue the excellent achievement of that industry in producing more reserves.

I have no views on FERC other than I understand what we are trying to cure here. For my statement, I just want to add this observation, and I say this to our Chairman: I have been more concerned that the industry and the region that we come from, that is natural gas and the producer side, be adequately represented on FERC.

Perhaps I have been more concerned about that than we have a new scheme for deciding when the Commissioners' terms would come in and come out. I do not think I am necessarily saying that the previous system ended up being pretty good for us, but I think the record is pretty clear that it has been.

We have under it been able to get representation from the producer side. To the extent that that might be watered down or rendered somewhat less significant by a new approach, I would not favor it.

I do not see why it has to be, but I merely want to say that, while you do not represent the President here in that way, I surely think it is imperative that we continue balanced representation on that Commission as much as that we have the balancing of the terms.

Thank you, Mr. Chairman.

I do not know that you have any comments. You wrote enough down and the record is here that, if I have said anything meaningful, that is fine. You can nod or say no or whatever suits you today.

Thank you, Mr. Chairman.

Mr. **Tuck**. Senator Domenici, just a couple of observations.

I am informed that the pipeline capacity to move Canadian gas to the United States is at present near its limit, and that it is not clear at this time that the Canadian gas will be able to capture 26 percent of the Northeast market. But what we do need to do is to focus on getting gas, U.S. gas, to that Northeast market to compete with that Canadian gas most assuredly.

Senator **Bingaman**. Thank you.

Senator **McClure**.

STATEMENT OF HON. JAMES A. McCLURE, U.S. SENATOR FROM IDAHO

Senator **McClure**. Thank you very much, Mr. Chairman. I have a brief opening statement. I will ask unanimous consent that it be made a part of the record at the appropriate point.

Senator **Bingaman**. We will include that in the record following my openng remarks.

Senator **McClure**. Mr. Chairman, I will just make a general comment and give each the opportunity to comment on it, and I will also give each of the witnesses that follow the opportunity to comment on the same thing, and I hope they will remember that and make a comment.

As we look at the membership of FERC and the idea of staggered terms, I think everyone is focused on the near-hiatus that we had last year and wants to find a way to avoid that, and I devoutly hope that can be the case. I do not think anybody spent more hours in agonizing negotiation trying to solve that than did this Senator.

And I think it came out well, by the way. I think that the result in the end was fine. But I point out that it did not just happen. There was an impasse between the Administration and the Congress over some of the personalities involved, and therefore vacancies were not filled in an orderly way.

Nominations did not flow to the Hill properly and the Hill did not act promptly on those nominations when they were received. And so there was as a matter of fact a hiatus created, not by the structure of FERC, but by the political struggle over the personalities and policies represented by personalities.

Now, if that is the case, and I think it is—I think the record would bear that out and I do not think I am telling any secrets when I say that—let us take a five-man Commission—five-person Commission, excuse me—and assume that the term of one expires and there is a fight between the Congress and the President over that person and the nomination is slow getting here and/or slow being acted on, and that lasts more than a year and a second term expires. Then you have somebody who wants to retire or resign or go to another job.

You have exactly the same position under a rotating five-year membership, a staggered five-year membership, as we experienced last year, in which there would not then be a quorum left to act.

Therefore, while I do not see any particular fault with the idea of five-year staggered terms and there may even be benefit, that would not cure the situation we had last year, and we could have again under a five-year staggered term precisely the same situation we had last year, and it would require precisely the same kind of negotiated settlement that produced the appointment of the Commissioners who now do serve.

With respect to the other bill, on the Assistant Secretary for Natural Gas, I note, Mr. Secretary, that you spent three and a half pages telling us why you were not ready to do that. Is that correct?

Mr. TUCK. Well, it was not quite that long, Senator McClure.

Senator McCLURE. Well, it starts on the first of page 1 and it ends at the middle of page 4. My math is a little rusty, but that sounds like three and a half pages to me.

Senator DOMENICI. Well, the first page is not full. It has that big heading.

Senator McCLURE. But if I could boil that down, and I think I am correct in doing so, what you are saying is you are looking at an organization, you would like the chance to look at it. You would like to see whether this is in order, you would like to see if that fits your ideas about how the Department should be organized. You will take into consideration the suggestion of an Assistant Secretary for Natural Gas as you are looking at a proposed or possible reorganization of the Department.

Do I summarize that correctly?

Mr. TUCK. Yes, sir, as well as the national energy strategy concepts are being fleshed out.

Senator McCLURE. I understand that, and certainly natural gas does, must, and will have a very, very important place in national energy policy. It is far too important from far too many different standpoints to have anything less than a very important place in any consideration of policy or strategy.

I think you would agree with that?

Mr. TUCK. Yes, sir, I would.

Senator McCLURE. I certainly will look forward to the rest of the testimony. I appreciate your testimony here today. I have an open mind on both issues.

Thank you very much.

Mr. TUCK. Thank you very much.

Ms. COOK. Senator McClure, could I address for a moment your comment?

Senator McCLURE. Surely.

Ms. COOK. It is certainly true that having fully staggered five-year terms for the Commissioners would not eliminate the possibility we would run into the same problem that we ran into this year. It would, however, make it considerably less likely.

Senator McCLURE. Why would it make it less likely? If you have a political fight and the President does not want to reappoint the person who was submitted, that fight lasts for more than a year, you have a second person out and you have a retirement.

Ms. Cook. Because the fight would have to last for a longer period of time.

Senator McClure. This fight lasted well over a year.

Ms. Cook. If in fact the fight lasted long enough so that you had several terms expire, certainly you would be in that situation. And there are some independent Commissions around town that have had that problem, that have fully staggered terms, and that have lost a quorum.

Senator McClure. As a matter of fact, this last fight did last more than a year, did it not?

Ms. Cook. It did. But if you had five-year terms, you would probably lose two in that situation.

Senator McClure. Well, you could lose two and have one resignation.

Ms. Cook. That is true, absolutely.

Senator McClure. And you have no quorum.

Ms. Cook. No question on that.

Senator McClure. And we had two resignations as well as two terms expire. I just do not see that it really eliminates the possibility or even heightens the likelihood that it would eliminate the possibility. I say that because I want people to focus on what happened last year and why it happened and to express the hope that it does not happen again, and an Administration and a Congress will not just sit there and play with the security of an industry over political issues, as important as those political issues were.

And I know how people fought over them, because I was trying to moderate between those forces in order to get a result.

Thank you.

Thank you, Mr. Chairman.

Senator Bingaman. Let me just comment that I think the situation we had last year was that we had two terms expiring within one year. At least we would solve that problem.

Senator McClure. You would solve that problem. But on the other hand, the provision allowed them to hold over for one year and that gave us a one-year grace period so people could haggle longer, which they did.

And when you have one term expire and you fight for more than a year, then you have a second term expire, then you are exactly where we were last year when you have a resignation.

Senator Bingaman. Well, if you have a constructive amendment we would love to see it.

Senator McClure. No. The constructive amendment is not a statutory one, but one to say to administrations and members of Congress: For gosh sakes, quit fighting over things that have the potential to disrupt national policy; resolve those arguments at an earlier date.

Senator Bingaman. I would agree with that.

Senator Burns?

Senator Burns. I have no opening statement and no questions until I hear more.

Thank you very much, Mr. Chairman.

Senator Bingaman. All right. We are very pleased to have you here. You are the kind of member we like to have. [Laughter.]

I will just ask one more question of this panel. I am concerned, Secretary Tuck, about the date that the Department of Energy has set for completing your national energy policy strategy. I gather it is the 1st of April next year. I believe that is what Henson Moore testified to a few weeks ago.

Mr. TUCK. Correct. What was said was that current law requires that an energy security report be presented by the President to the Congress in April of odd-numbered years. That date has come and gone. We have not met that particular date.

We have communicated with the Congress asking for an extension of a year. In effect, that is exactly what Secretary Moore asked for.

I think if you will just give me a second, let me tell you a little bit more about how I think this thing is going to unfold. I think we are going to have a skeletal draft in hand within about 90 days, meaning in the June-July time frame, of how this plan will be structured.

I think we will have a fleshed-out draft of that plan and strategy by early 1990, to be debated in conjunction with the Department of Energy's fiscal year 1991 budget hearings. I think we will have a plan that is dependent on previous Department of Energy policy work, but that will integrate the multiple objectives of the Department.

The plan will be kept in draft form or could be kept in draft form for some time, and it would be dynamically maintained—I think Secretary Moore touched on that—with yearly updates.

There would be a working document with near-term, medium term, and long-term objectives that would be revised as new knowledge and technology become available. There would be a document which would be revised regularly as a result of recurrent contact between the staff of the Department of Energy and principal officers in the Congress and State and local governments and the private sector.

And I think that we would have a plan—or this development process for this plan would also include staff from within and outside the Department able to build a consensus on policy and strategy through extensive public consultations.

All of that is a long way of saying that I think that we would have something close to a final product in about a year from now, yes, sir.

Senator BINGAMAN. Let me ask when the first of those, the skeletal draft that you referred to that is to be out within 90 days—will that be a public document?

Mr. TUCK. It is my understanding that, yes, it will be a public document. There will be an opportunity for input across the spectrum.

Senator BINGAMAN. So we should see that by the 1st of August?

Mr. TUCK. I would think that that is totally reasonable. Yes, sir.

Senator BINGAMAN. And from that skeleton draft, we would be able to determine the priority that is given to natural gas, both in funding decisions or the relative priority as compared to other parts of the energy package?

Mr. **Tuck**. It would begin to be fleshed out in that time frame. It would not be finalized by any means, but it would begin to be fleshed out in that time frame.

Senator **Bingaman**. Okay, all right.

We have a few follow-up questions that I will submit for the record.

If neither of my colleagues have other questions now, we would dismiss this panel and ask the second panel to come forward. I thank you both very much for your testimony.

The second panel is Mr. Nicholas Bush, Mr. George Lawrence, Mr. Danny Conklin, and Mr. Vernon Jones.

I am informed, Mr. Bush, that you may have to leave early and I would therefore call on you to go ahead first. But we would probably take the testimony of each witness, if we could, before we ask questions.

Go ahead, please.

STATEMENT OF NICHOLAS J. BUSH, PRESIDENT, NATURAL GAS SUPPLY ASSOCIATION

Mr. **Bush**. Mr. Chairman and members of the Committee:

I am Nicholas J. Bush, President of the Natural Gas Supply Association. NGSA is a national organization of independent and integrated domestic companies which explore for, develop, and produce and market approximately 90 percent of the nation's natural gas.

I would like to thank you, Senator Bingaman, for the opportunity to testify at this hearing and for your leadership in introducing this legislation. With the understanding that my complete comments on both bills will be inserted into the record, I will summarize briefly my remarks on both S. 388 and S. 389.

NGSA supports S. 388. However, I must say that, having listened to Senator McClure, I would like to identify myself with his comments on both the explanation of what did occur last year—I think that he gave a very frank assessment of what really was at the heart of the problem in that dispute that developed, and I think his candor is to be appreciated in this regard.

I do think, however, that S. 388 would be beneficial. And we do also note at the same time that we would support the DOE and FERC's recommendation. We had much the same concern and would like to see the grace period retained. We think that offers some flexibility and might be a good thing to retain.

One thing I might offer as an aside, one of the reasons that the five-year, it appears to us, might be good is that it does offer the opportunity for an additional year of service in the job that you are being sought in, and it might be more attractive to people of a higher quality. And therefore there is an opportunity, we would think, of attracting perhaps better candidates in a five-year stint.

The other thing I might note, while it is not in my written comments nor in my oral remarks, I just might offer as an aside, is that I think a very critical issue, given my experience in this listening to people who would like to be part of the Commission or in other important jobs here in Washington—the pay raise issue is not an insignificant one.

The Federal Energy Regulatory Commission tends to be made up of people already in Washington too often. There is an awful lot of good state regulatory commissioners who have had experience with natural gas. But quite frankly, when you try to match the living standards of the Washington area to a very short term, combine that with the pay raise, I think in my experience it has proven to be very, very difficult to try to attract really good people or encourage them to come to Washington to serve in these positions with that kind of consideration.

So I just offer that as another. While it is not addressed by the bill, it is a matter of much debate within both houses of Congress, and I think it is something that at least those of us who have an appreciation for the fact that the quality of people at the Commission is very much a deep concern to all of us.

And to the extent that all of these issues are of some concern, we would like to see them effective.

We do, though, support S. 388. We wholeheartedly support it. We would like to see the grace period retained. But with those concerns expressed, I just offer those comments on 388.

As to S. 389, Senator, I guess at the outset what I would like to say is that we want to support Secretary Watkins and Deputy Secretary Moore. We believe that the President has given them the chance to organize the Department of Energy and to assure that their views of how the nation's energy policy should be articulated, that they will be balanced and sound approaches.

We have been greatly encouraged by Secretary Watkins' and Deputy Secretary Moore's public statements, both here before this Committee and elsewhere. They clearly have demonstrated an understanding and appreciation of the contribution that natural gas can and will make to the nation's economic, energy, and environmental future.

I think it is a bit premature to make the judgment that we should associate with Secretary Watkins and Deputy Secretary Moore the concerns that have been expressed in the past about the Assistant Secretary for Fossil Fuels being so preoccupied with coal technology and coal developments that are unwilling to give the appropriate attention to natural gas.

We do not oppose S. 389. That is, we are not here to tell you that we are here to oppose it. We are just simply saying that we have a great deal of respect and a great deal of admiration for both Secretary Watkins and Deputy Secretary Moore.

I think they are trying to become organized now, and if they feel that this is something that ought to be done we would wholeheartedly support this and would wholeheartedly support your bill.

But we do want to express our appreciation for you raising this issue and raising the fact that natural gas should be recognized, from not only New Mexico but from a number of states, where natural gas is becoming an increasingly important contributor to the nation's energy policy.

To the extent that that does that, we are very thankful to you, Senator Bingaman. And we will be happy to comment further on any of the points you have raised with other witnesses.

Thank you.

[The prepared statements of Mr. Bush follow:]

U.S. GAS PRODUCERS'
PERSPECTIVE ON S. 388

TESTIMONY

OF

NICHOLAS J. BUSH

PRESIDENT

NATURAL GAS SUPPLY ASSOCIATION

(NGSA)

BEFORE THE

COMMITTEE ON ENERGY AND

NATURAL RESOURCES

UNITED STATES SENATE

APRIL 17, 1989

Mr. Chairman and Members of the Committee, I am Nicholas J. Bush, President of the Natural Gas Supply Association (NGSA). NGSA is a national organization of independent and integrated domestic companies which explore for, develop, produce and market approximately 90% of the nation's natural gas.

On behalf of our member companies, NGSA thanks the Chairman and his staff for the opportunity to participate in today's hearing. I would also like to commend Senator Bingaman for his outstanding job in introducing this timely legislation.

My written testimony will basically discuss NGSA's position on staggering the terms of Commissioners of the Federal Energy Regulatory Commission (FERC). In the section entitled "background" I identify the applicable provisions of the Department of Energy Organization Act and how those provisions could result in a loss of quorum at the Commission. Following that section, I describe how S. 388 changes the current system and identify a possible concern that should be further discussed by the Committee. Finally, in the last section entitled "conclusion," we state how S. 388 would minimize the possible disruptions and allow for the smooth transition between individual Commissioner's terms.

NGSA POSITION ON S.388

NGSA advocates the passage of S. 388 since it will add stability and continuity to the decision-making process at the Federal Energy Regulatory Commission (FERC). By not staggering the terms of the FERC Commissioners, the possibility exists that a quorum would be lacking at some future time. If that were to occur, the FERC would not be able to carry out the duties assigned to it by the Congress. Consequently, since S. 388 attempts to solve that problem, among others, NGSA supports it.

NGSA recognizes that there is no solution to FERC Commissioners retiring early or possibly at the same time. Such a situation could impair the functioning and effectiveness of the FERC. Nor does S. 388 guarantee that nominations to the FERC will be acted upon by Congress in an expeditious fashion. As a general proposition, however, NGSA believes that the changes proposed by S. 388 will mitigate the possibility of quorum deficiencies that could impede the timeliness of the FERC's decision-making activities. NGSA believes that S. 388 is not only timely, given occurrences last year, but will assure that the agency will function in a prudent and rational manner.

BACKGROUND

Both the number of FERC Commissioners and their terms are authorized by the Department of Energy Act (DOE). The DOE Act currently authorizes five Commissioners to serve four-year partially unstaggered terms. For example, with the current Commission, one member's term expires in 1989, none expire in 1990, two expire in 1991, and two expire in 1992. In the event that no replacement has been appointed when a Commissioner's term has expired, the DOE Act authorizes a one-year extension.

Because the FERC Commissioners terms are currently unstaggered, the possibility of not having a quorum is ever present. Only last year, the Commission nearly lost a quorum through retirement, and the expiration and near expiration of initial and extended terms. Even a potential loss of quorum could result in a needless postponement of an often pressing regulatory agenda.

ANALYSIS OF S. 388

Passage of S. 388 would move from the present, partially unstaggered system to a fully staggered arrangement with each of the five Commissioners serving a five-year term. The transition to full staggering will occur as follows: the successor to the term expiring in 1989 (currently occupied by Commissioner Stalon), will serve until December 31, 1993; one of the successors to the two terms expiring in 1991 (currently occupied by Chairman Hesse and Commissioner Moler) will run until December 31, 1994, and the other successor will serve until December 31, 1995; one of the successors to the two terms expiring in 1992 (currently occupied by Commissioners Langdon and Trabandt) will serve until December 31, 1996, and the other successor will serve until December 31, 1997. Furthermore, S. 388 will discontinue the automatic one-year extensions.

POSSIBLE SHORTCOMING TO S. 388

The removal of automatic extensions appears to be premised on the assumption that vacancies will always be filled on or before the expiration of a predecessor's term. For practical purposes, this may not always be the case. Under current law, a failure to appoint a successor immediately upon the end of a term nevertheless leaves a full Commission for at least a year. In contrast, under S. 388, a failure to timely appoint a successor could result in a prolonged vacancy. A vacancy would result in a four-member Commission -- raising the possibility of tie votes and regulatory deadlock. One possible solution would be to retain the current allowance for a one-year extension.

CONCLUSION

With the minor concern expressed above regarding the one-year extensions, NGSA supports S. 388 as a vehicle to stabilize possible disruptions in the smooth transition between individual Commissioner's terms. By fully staggering the Commissioners terms, S. 388 will promote the efficient and orderly resolution of the Commission's regulatory agenda. NGSA while supporting the concept of staggered terms does not necessarily advocate extending FERC Commissioner terms.

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Mr. Chairman and Members of the Committee, I am Nicholas J. Bush, President of the Natural Gas Supply Association (NGSA). NGSA is a national organization of independent and integrated domestic companies which explore for, develop, produce and market approximately 90% of the nation's natural gas.

On behalf of our member companies, NGSA thanks the Chairman and his staff for the opportunity to participate in today's hearing. I would like to commend Senator Bingaman for his efforts to enhance the role of natural gas within the Department of Energy's structuring and to highlight the importance of this increasingly significant fuel.

Mr. Chairman, I should note at the outset that NGSA wishes to support Secretary Watkins and Deputy Secretary Moore in their view of how best to organize the Department of Energy to assure that the nation's energy policy is balanced and sound. We have been greatly encouraged by the statements of the Secretary and Mr. Moore before this committee and elsewhere. They clearly have demonstrated an understanding of the contribution that natural gas can make to the nation's economic, energy, and environmental future. Some have expressed concern in the past that the Assistant Secretary for Fossil Fuels has been focused primarily on the Department's coal program and that attention to natural gas policy in particular has suffered as a result.

We do not believe that will be the case under the stewardship of Secretary Watkins or Deputy Secretary Moore. NGSA does not oppose S. 389. We will support it, particularly if the Secretary and the Deputy Secretary believe it would assist them in their efforts to formulate and implement energy policy. We agree, of course, that natural gas deserves increasing recognition as a valuable energy source. At the same time, NGSA has some questions about the effects of creating an Assistant

Secretary for natural gas. Would there be a campaign, for example, to create an Assistant Secretary for oil, for coal, or for electricity generation? Our concern is that often the creation of additional segments in any department leads to jurisdictional disputes and a resulting slowdown in decision making. We do not wish to put undue emphasis on these concerns, but only express our belief that whatever decision is made on this matter, the result should be an improvement in the consideration of natural gas policy.

NGSA has traditionally advocated the use of natural gas as a secure, readily available and clean burning solution to our nation's energy needs. The virtues of natural gas have assumed a predominant role in the current energy debate. Natural gas should, therefore, assume an apparently important position in the Department of Energy.

The DOE Act currently provides for eight assistant secretaries, none of whom is exclusively responsible for the development and promotion of natural gas. S. 389 would provide for an Assistant Secretary who would be responsible for coordinating natural gas research and development, natural gas imports (under the direction of the Secretary of Energy and in cooperation with the FERC) and "Federal policy respecting exploration for and production, transmission and use of natural gas."

While S. 389 proposes that the new Assistant Secretary would be responsible for coordinating Federal natural gas policy, the bill does not elaborate on the relationship between the Assistant Secretary and the FERC. NGSA would not support an effort to remove the independent authority of the FERC and we would assume that an Assistant Secretary of Natural Gas would not be envisioned as doing so.

CONCLUSION

Natural gas has an important position in our nation's energy policy. S. 389 would reaffirm that importance. NGSA applauds this effort, and endorses passage of S. 389 if the Administration concludes that a reorganization of the DOE is desired.

Senator BINGAMAN. Thank you very much.

Mr. Jones, we are glad to have you here.

STATEMENT OF VERNON T. JONES, PRESIDENT, THE WILLIAMS COMPANIES, INC., ON BEHALF OF THE INTERSTATE NATURAL GAS ASSOCIATION OF AMERICA

Mr. JONES. Thank you very, very much, Mr. Chairman. My name is Vernon Jones. I am the President of the Williams Companies, headquartered in Tulsa, Oklahoma. I am the immediate past Chairman of the Interstate Natural Gas Association of America, and I am appearing here today on behalf of INGAA to discuss both the trade associations position on S. 388 and their position on S. 389.

INGAA fully supports the provisions of S. 388 to adjust the timing and the duration of the terms of the Commissioners serving on the Federal Energy Regulatory Commission. While I was chairman of the trade association, I was at least peripherally involved in a number of the discussions and items that came under a lot of long consideration in working to maintain at least a quorum on the Commission during last year.

The industry is going through very, very dramatic changes as a result of changing policies implemented under this Commission and its predecessor Commission, and timing was extremely important last year, that the Commission be able to move forward and continue to implement those policies, important not just to the pipelines but to the producers who control the supplies and to the distribution companies who serve the end user markets.

Our trade association is quite often divided in its views as to how the association should deal with a number of pieces of legislation, but this is an instance where our trade association is absolutely unanimous in its support for the changes that are contemplated in the bill.

We do, as a nuance in considering this bill, really not favor the continuation of the grace period, I guess in light of our recent experience and what we feel could have been—was probably an extremely close call. If it had not been for the intervention of people from the Administration and some wise heads intervening on the side of the Senate Energy Committee, we could very well have found ourselves at an absolute deadlock last year.

We think that doing away with the grace period would probably encourage the Administration to move forward with timely nomination of individuals qualified to serve on that Commission and be very considerate of the political aspects of each of those nominees and their individual qualifications.

Turning to Senate Bill 389, establishing an Assistant Secretary for Natural Gas within the Department of Energy, we strongly recommend that such a position be created within the Department of Energy.

INGAA's advocacy of this particular piece of legislation should not be interpreted as a criticism of the past or current Departmental policies or programs or the people that are putting those in place, but simply a recognition of some of the oversights and problems that we have seen occur in the past and the needs that are dictated by changing times and circumstances that natural gas be given the benefit of a policy position within the Department that focuses on gas and its potential role in all of the various markets that it can serve and that focuses on the need for appropriate research and development moneys to be made available to further develop the markets to their potential and provide additional support in developing added supplies of natural gas over the long term.

There are a number of specific opportunities in this area that are pointed out in my filed testimony.

And again, we are not criticizing past decisions. I think it is a recognition of the changing times and all of the elements that are in play, including the changes in the environmental requirements, the availability of natural gas versus certain other natural resources, and of course the increasing level of the import of foreign crude oil to serve our transportation markets principally.

Thank you for the opportunity to appear here, and I will be glad to answer any questions.

[The prepared statement of Mr. Jones follows:]

STATEMENT OF VERNON T. JONES
PRESIDENT, THE WILLIAMS COMPANIES, INC.
on behalf of the
INTERSTATE NATURAL GAS ASSOCIATION OF AMERICA
before the
COMMITTEE ON ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE

April 17, 1989

Mr. Chairman and Members of the Committee:

I am Vernon Jones, President of the Williams Companies and a member of the Board of the Interstate Natural Gas Association of America. I am appearing before the Committee today on behalf of INGAA to discuss two bills: S. 388, the Federal Energy Regulatory Commission Member Term Act of 1989; and S. 389, a bill to amend the Department of Energy Act to establish a position of Assistant Secretary of Natural Gas within the Department of Energy (DOE).

INGAA is the trade association representing American interstate natural gas pipelines and Canadian interprovincial pipelines. INGAA's U.S. member companies are subject to extensive Federal regulation pursuant to the Natural Gas Act (NGA) and the Natural Gas Policy Act (NGPA) as these statutes are administered by the Federal Energy Regulatory Commission (FERC or Commission). Both our U.S. and Canadian members are directly affected by decisions of the FERC and the DOE concerning imports of natural gas into this country, and other policy issues relating to our industry. First I will discuss S. 388 and then S. 389.

INGAA fully supports S. 388, a bill that adjusts the duration and the timing of the terms of Commissioners serving on the Federal Energy Regulatory Commission.

INGAA's member companies, and INGAA itself, interact on a daily basis with the Commission. The extensive statutory authorities vested in the Commission require interstate pipeline companies to obtain FERC review and approval of basic business functions such as pipeline construction, rates and services. These Commission decisions play a central role in the structure of our industry and our ability to operate efficiently and profitably.

As would be expected with any regulated industry, there are frequent and occasionally strong disagreements between interstate pipelines and the Commission as to the interpretation of law or the appropriateness of a given policy. But there is unanimous agreement among INGAA's membership that the interests of both the public and the industry are best served by a Commission that is knowledgeable and experienced, and one marked by continuity of policy as well as key personnel.

Unfortunately, under the current system it is not unusual for several vacancies on the Commission to occur simultaneously or in quick succession. This can result in several problems. It is our experience that while those seats are vacant, and until the new appointees have become familiar with the issues, important decisions may be postponed. Also, with the appointment of two or more new Commissioners, there is an increased risk of inconsistent swings in policy.

I emphasize that these comments are not to be interpreted as a criticism of any individual Commissioner. It is simply an unfortunate fact that when vacancies occur on the Commission, particularly two vacancies simultaneously, there is a natural tendency to go slower on major policy issues. There is an inescapable period required for new Commissioners, once confirmed, to educate themselves on current Commission policies, policies under development, and the specific cases pending before the FERC.

S. 388 is designed to adjust the terms of FERC Commissioners to minimize the possibility of multiple vacancies. Under the DOE Act, the five FERC Commissioners serve four-year terms that are not fully staggered. Presently, one member's term expires in 1989, none expires in 1990, two expire in 1991, and two in 1992. Current law also allows Commissioners to serve for a one-year extension following the expiration of their term, if a replacement has not yet been confirmed. Aside from the lack of fully staggered terms, the presence of the automatic one-year grace period has sometimes allowed administrations to postpone a decision concerning the appointment, further compounding the problem. If, for example, the two Commissioners serving until 1991 are carried over on the grace period until 1992, a Presidential election year, as many as four Commission positions would be up for appointment at once.

This concern is not unwarranted. Last year, for example, a combination of vacancies, resignations, and grace-period terminations resulted in a situation in which the the Commission was on the verge of losing a quorum. The Senate, on October 4, 1988, did confirm a package of five nominees, some new and some reappointments. This action narrowly averted what could have been a very serious breakdown of the regulatory process.

S. 388 makes several changes to the DOE Organization Act. The bill provides for a restructuring of the terms, so that as existing terms end, the new or reappointed Commissioners serve five-year, fully staggered terms. Additionally, the current grace period is deleted from the Act.

Under the bill, the appointee to the term expiring this year (currently filled by Commissioner Stalon) will serve until December 31, 1993. Of the two appointees to fill the two slots that expire in 1991 (currently held by Chairman Hesse and Commissioner Moler) one would be appointed to a term expiring December 31, 1994 and one would serve until December 31, 1995. For the two terms expiring in 1992 (currently held by Commissioner Langdon and Commissioner Trabandt) one of the appointees would serve until December 31, 1996, and one would serve until December 31, 1997.

Following this transition period, all subsequent Commissioners would serve five-year terms. As is the case currently, should a Commissioner fail to serve the full length of his or her term, that Commissioner's successor shall be appointed to serve the remainder of the departed Commissioner's term rather than to a full five-year term. This preserves the staggered nature of the structure.

Of course, there can be no guarantee that a combination of resignations or otherwise-occurring vacancies will not at some point in the future lead to a situation where more than one vacancy occurs simultaneously. However, S. 388 should greatly reduce the potential of that happening.

Similarly, the deletion of the grace period should lead to more expeditious nominations, minimizing the likelihood of "lame duck" Commissioners. For the same reason, these changes will provide more continuity of service on the Commission.

In summary, INGAA believes the changes proposed by S. 388 will improve the functioning of the Commission by adding stability to the FERC and reducing the likelihood of large turnovers in Commissioners over short time spans. The bill is written to begin the transition to the five-year, staggered structure with the confirmation of the Commissioner to the term expiring later this year. As the transition necessarily will be made over a period of some years, we urge the Congress to enact S. 388 quickly, so that we can begin the conversion to this new system this year.

Let me now turn to S. 389, legislation to establish an Assistant Secretary for Natural Gas within the Department of Energy.

Mr. Chairman, there is good news for America's energy future: a strong natural gas resource base is available to help reduce our dependence on foreign oil, the country's pressing air pollution problems and the shortage of electric generating capacity that the country faces. Unfortunately, Mr. Chairman, the Department of Energy has for years underestimated the important contribution natural gas can make in this country's energy picture. Consequently, too little attention and too few resources have been directed to natural gas-related research and development efforts and to the role natural gas can play in our energy policy.

At the outset, let me make clear that INGAA's advocacy of this new position should not be interpreted as a criticism of past or current Departmental officials or programs. While those of us in industry were much more optimistic about the potential resurgence of the industry following the curtailments of 1977 than were many government officials, few experts predicted falling wellhead gas prices, the ten-year deliverability surplus, falling world oil prices, and the transformation of the gas industry that has occurred over the past few years. It would certainly be unreasonable to fault DOE for not anticipating these developments.

The fact remains, however, that times and circumstances have changed, and now natural gas is being challenged to assume a larger role in our country's energy picture. It is important that DOE give natural gas research and policy issues a higher priority organizationally, if we are to meet that challenge.

Looking back, the Department of Energy was formed on August 4, 1977, a time when many thought natural gas to be a dwindling resource. Of course today it is recognized that the shortages of the 1970s were not the result of a shrinking resource base of natural gas, but rather primarily the result of restrictive wellhead price controls imposed by the federal government. But in 1977, the government viewed natural gas more as part of the energy problem than as part of the energy solution. The goal of energy policy was to reduce gas consumption by limiting the markets it could serve.

The original National Energy Plan submitted in 1977 went so far as to propose phasing out the use of natural gas in utility and industrial applications:

> Industry and utilities would be prohibited from burning natural gas and petroleum products in new boilers, with limited environmental and economic exceptions. Industrial firms also could be prohibited from burning gas or petroleum in major fuel-burning installations other than boilers, by regulations applicable to categories of

> installations, or on a case-by-case basis. Existing facilities with coal-burning capability could be prohibited from burning gas or oil, where the burning of substitute fuels would be economically feasible and environmentally acceptable. (The National Energy Plan, April 29, 1977, p. 66)

Congress did pass the Powerplant and Industrial Fuel Use Act (FUA) in 1978, which enacted many of these provisions into law.

Thus at the time of the Department's creation, natural gas policy primarily consisted of managing the consumption of what was widely thought to be a diminishing fuel resource. Natural gas pricing and regulatory issues were viewed in the context of this framework. In terms of the DOE organization debate, gas was discussed primarily in the context of whether the Federal Power Commission should remain an independent body or its authorities be folded into DOE.

There was one policy instituted during the Carter years that was an exception to this negative view toward gas, and it was one of the few times DOE has actually taken the initiative to implement an active natural gas policy. Shortly after the NGPA was enacted, the interstate market had begun suffering from the gas "bubble." At the same time, international oil markets were unstable and the dangers of over-reliance on imported oil were viewed as being of paramount importance. Against this backdrop, DOE initiated a policy designed to displace imported oil burned in industrial facilities capable of using natural gas. DOE developed a procedure to certify such opportunities and, following through on the Department's initiative, FERC issued Order No. 30 implementing the plan.

To INGAA's knowledge, this is the one of the few examples of DOE utilizing natural gas to achieve a positive energy policy goal.

The Reagan Administration did hold a more optimistic view of the natural gas industry, but its efforts over the last six or eight years seem to have been largely directed toward legislative goals. Although I would in no way want to diminish the importance of those actions, they do not, however, substitute for a well-focused natural gas policy and in some ways make the need for a more focused policy even more important.

Within the last few years, the Department has realized that the negative supply picture painted previously was incorrect. In the natural gas resource assessment prepared by the Office of Policy, Planning and Analysis last May, the Department reported nearly 600 Tcf of gas should be recoverable at prices of $3.00/Mcf or less and that well over 1,000 Tcf were technically recoverable. A recent EIA study projected total sales of gas in the year 2000 of 21 Tcf, two or three Tcf more than is currently consumed on an annual basis. Both of these new analyses reflect a much more positive view of natural gas than previous reports.

Also, the DOE Energy Security Study released last year projected growing oil imports in the years ahead and noted that natural gas was abundant and able to substitute for imported oil in many applications.

Despite this renewed confidence in the ability of natural gas to play a larger role in our energy policy, the historic lack of serious commitment to gas continues to be reflected in the R&D budgets of the Department. Over the last few years, the gas component of the fossil energy budget within DOE has averaged about 3% of the R&D budget. In the Administration's proposed FY 1990 budget, that percentage drops even lower.

Although very few fossil energy R&D funds are explicitly earmarked for natural gas research, DOE has funded gas-related research from other budget categories if the research can be related to those categories. This money has come primarily from the coal, conservation and renewable budgets. While total gas R&D funding was $100.7 million in 1989, only $44 million has been proposed for 1990. This is in contrast to over $800 million proposed funding for coal research. While the industry appreciates the willingness of the Department to support natural gas research, regardless of the budget category, this approach reinforces our concern over the lack of a centralized, well-funded, and well-coordinated natural gas research effort.

Some of the gas-related programs that INGAA believes have been shortchanged by this process include hydrocarbon geoscience research, fuel cell research, gas-fired heat pumps and prime movers, cooling systems and unconventional gas research.

Another prime example is the natural gas vehicles (NGV) R & D program. NGVs offer a tremendous potential, particularly for bus and fleet applications in urban areas. Yet despite Congressional enactment of the Methane Transportation Research Development and Demonstration Act in 1980, the Department has yet to put any significant funding into the program.

Just as gas R & D requirements deserve greater support, there has been only occasional interest in natural gas from a policy perspective. I mentioned the Order 30 program previously, and the Department has revitalized the national security-related program designed to help prevent and respond to energy emergencies. However, in our opinion, more direction and leadership need to be given to such policy questions as the use of natural gas as an environmental control option, helping to make practical new drilling and production technologies, and facilitating the use of gas as a means to help meet the growing shortage of electric generating capacity.

For example, using advanced technology, gas can be burned in certain boilers in conjunction with coal to achieve substantial reductions of both SO_2 and NO_x as well as other positive environmental results. While DOE has recently shown increased interest in this potential by making funds available for additional research, INGAA is unaware that sufficiently high level departmental attention is being given to incorporating these natural gas options into clean air policy.

Likewise there seems to be little systematic policy at DOE directed toward using natural gas to meet the increasingly critical need for additional intermediate and peaking electric generating capacity in the country. Gas-fired combined cycle electric power generation is widely expected to play a key role in meeting the rapidly approaching shortfall in generating capacity. We understand that analytic work in this area is now ongoing, but without a policy-level advocate for programs to help make these projects succeed, it is questionable whether the analytic work will translate into positive action.

In summary, INGAA believes that the Department has systematically underestimated the importance of natural gas to our country's energy requirements.

INGAA believes that creating a position of Assistant Secretary for Natural Gas within the Department with responsibility for natural gas policy initiatives and R&D functions will help overcome these shortcomings of the past. Specific duties could include:

- analyzing the opportunities to more fully develop natural gas as a part of our country's energy policy;
- responsibility for all natural gas-related R&D programs, including programs aimed at the production, transmission, distribution and consumption segments of the industry;

- responsibility for developing the natural gas component of Administration environmental policy;
- responsibility for developing energy policies that utilize natural gas where practical to reduce dependence on imported oil.
- coordinating with Departmental officials responsible for electric generation matters to facilitate the use of natural gas to meet power generation needs; and
- examining the impact of the tax code on the industry, particularly its impact on the producer segment, and evaluating the appropriateness of providing tax incentives or other measures to sustain the production infrastructure in this country.

Procedurally, the DOE Organization Act provides in Section 203 that there shall be "eight Assistant Secretaries appointed by the President, by and with the advice and consent of the Senate...." Currently, the Assistant Secretaries include:

Assistant Secretary for Management and Administration

Assistant Secretary for Congressional, Intergovernmental and Public Affairs

Assistant Secretary for International Affairs and Energy Emergencies

Assistant Secretary for Nuclear Energy

Assistant Secretary for Fossil Energy

Assistant Secretary for Conservation and Renewable Energy

Assistant Secretary for Defense Programs

Assistant Secretary for Environment, Safety and Health

The Administration has the discretion to restructure the Department and could create an Assistant Secretary for Natural Gas without any legislative action. Obviously, INGAA would support such a reorganization, but in its absence, legislative action is required.

As I stated at the outset, we are not criticizing past decisions or actions of the Department. However, if natural gas is to realize the important contribution that it can make toward solving this country's energy problem in the coming years, it will require that the Department have the organizational capability to effectively address natural gas policy issues as well as R&D needs.

I thank the Committee for this opportunity to appear and will try to answer any questions you may have.

Senator BINGAMAN. Thank you very much.

I have failed to mention, Mr. Bush, if you need to leave——

Mr. BUSH. That is all right.

Senator BINGAMAN. Mr. Conklin, we are glad to have you here.

STATEMENT OF DANNY CONKLIN, CHAIRMAN, INDEPENDENT PETROLEUM ASSOCIATION OF AMERICA

Mr. CONKLIN. Thank you very much, Mr. Chairman. My name is Danny Conklin, a partner in Philcon Development Company in Amarillo, Texas, and we are an oil and natural gas exploration company.

I appear here today as Chairman of the Independent Petroleum Association of America. We are a national association representing nearly 10,000 independent crude oil and natural gas producers and explorers in all 33 states with oil and natural gas production.

Mr. Chairman, it is my pleasure for me to be here to discuss these two bills, S. 388 and S. 389, and I find myself wanting to congratulate you for attacking and recognizing the problem that we faced as far as FERC and the problem with the Commissioners.

I agree with Senator McClure, that he put it right on the table, what the real problem was. And I would not call myself an innocent observer, but I was observing anyway, that the whole role that he brought out was definitely played by all parties.

I think that this bill does attack the problem and we support it. And when you look at the problem that could happen and a quorum not be present and the filings that could happen, it would not be acceptable to possibly the producer side of the industry or even the customer side of the industry.

So we do support you.

Moving on to S. 389, as we reviewed the pros and cons of this legislation, the legislation to create an Assistant Secretary for Natural Gas, we had the opportunity to reflect back upon the energy world in 1977 at the time when DOE was created.

At that time, you will recall, conventional wisdom included the following: As a nation we are running out of natural gas and all that could be done was call on the FERC to shepherd the shortage until natural gas was used up, saving it as long as possible for residential customers;

Continue to prepare ourselves for ever higher oil prices;

Control the wellhead prices of both domestic crude oil and natural gas;

Do everything we could to use more coal, a fossil fuel that can be found in ample abundance domestically;

Mandate conservation;

Press ahead rapidly on developing exotic and renewable sources of energy;

And look to nuclear power plants as a major source of new electric generation.

As a result of all this wisdom, we created the Economic Regulatory Administration within the DOE to regulate crude oil and products. Then we reorganized the Federal Power Commission, called it the FERC, and turned natural gas regulation over to it.

Nuclear energy was given an Assistant Secretary, and conservation and renewable energy was designated as a subject for an Assistant Secretary.

Then we created the Assistant Secretary for Fossil Energy. While crude oil and natural gas are fossil fuels, because much of the action for these two fuels were being handled by the FERC and the ERA, coal became the primary focus of this agency by default.

Today, with growing concern about the environment, problems of acid rain and ozone depletion, and because we have turned our backs on nuclear-generated electricity, natural gas as the fuel of the future is as much in vogue today as "we are running out of natural gas" was ten years ago.

This all leads to what appears to be a change in priorities, and as such we should consider reorganizing the DOE to reflect these changes. For example, just this past January DOE authority over natural gas imports was transferred from the ERA to Fossil Energy. Independents view this as an important function and one which should have the fullest possible attention of an Assistant Secretary.

And as I said in the opening of this statement, Mr. Chairman, IPAA represents the independent crude oil and natural gas producer-explorer of this country. Therefore, I would ask that any newly focused agency within DOE not just address natural gas, but domestic crude oil and natural gas.

We do not have a strong preference as to how this might be accomplished. To do it administratively would by necessity have the effect of lessening emphasis on something else—renewable, conservation, coal, or nuclear—and I do not want to suggest who should be the loser so that we might win.

Therefore, it might be easier to add a position legislatively, even though some might resist that approach as an unnecessary bureaucratic extension. Let me say that the relative small cost of creating an Assistant Secretary for domestic crude oil and natural gas would be insignificant when compared to the expected gain from a more focused approach to the optimum production and utilization of these two primary sources of energy.

Thank you very much for the opportunity to appear.

[The prepared statement of Mr. Conklin follows:]

INDEPENDENT PETROLEUM ASSOCIATION OF AMERICA

STATEMENT OF
DANNY CONKLIN
Representing the
INDEPENDENT PETROLEUM ASSOCIATION OF AMERICA
AND

AMERICAN ASSOCIATION OF PETROLEUM LANDMEN
ASSOCIATION OF OILWELL SERVICING CONTRACTORS
CALIFORNIA INDEPENDENT PRODUCERS ASSOCIATION
COASTAL OIL AND GAS ASSOCIATION
EASTERN KANSAS OIL AND GAS ASSOCIATION, INC.
EAST TEXAS PRODUCERS AND ROYALTY OWNERS ASSOCIATION
ENERGY CONSUMERS AND PRODUCERS ASSOCIATION
GEORGIA OIL AND GAS ASSOCIATION
ILLINOIS OIL AND GAS ASSOCIATION
INDEPENDENT OIL AND GAS ASSOCIATION OF NEW YORK
INDEPENDENT OIL AND GAS ASSOCIATION OF WEST VIRGINIA
INDEPENDENT OIL PRODUCERS' AGENCY
INDEPENDENT OIL PRODUCERS ASSOCIATION TRI-STATE, INC.
INDEPENDENT PETROLEUM ASSOCIATION OF MOUNTAIN STATES
INDEPENDENT PETROLEUM ASSOCIATION OF NEW MEXICO
INDIANA OIL AND GAS ASSOCIATION
INTERNATIONAL ASSOCIATION OF DESK AND DERRICK CLUBS
INTERNATIONAL ASSOCIATION OF GEOPHYSICAL CONTRACTORS
KANSAS INDEPENDENT OIL AND GAS ASSOCIATION
KENTUCKY OIL AND GAS ASSOCIATION
LIAISON COMMITTEE OF COOPERATING OIL AND GAS ASSOCIATIONS
LOUISIANA ASSOCIATION OF INDEPENDENT PRODUCERS AND ROYALTY OWNERS
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OHIO OIL AND GAS ASSOCIATION
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Before the
Senate Energy and Natural Resources Committee
April 17, 1989

Representing America's Domestic Petroleum Explorer Producers
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Statement of
the
Independent Petroleum Association of America
before the
Senate Energy and Natural Resources Committee
April 17, 1989

My name is Danny Conklin, a partner in Philcon Development of Amarillo, Texas, an oil and natural gas exploration company. I appear here today as Chairman of the Independent Petroleum Association of America, the national association representing the nearly 10,000 independent crude oil and natural gas producer/explorers in all 33 states with oil and natural gas production.

Mr. Chairman, it is a pleasure for me to be here today to discuss with you two bills -- S.388 and S.389 -- having to do with organizational aspects of the Federal Energy Regulatory Commission and the Department of Energy.

The first bill, S.388, introduced by New Mexico Senator Jeff Bingaman, Chairman Johnston, and Senator David Boren of Oklahoma, would simply adjust the terms for the members of the Federal Energy Regulatory Commission.

As you know, Mr. Chairman, on a couple of occasions the anomalies of the current alignment of terms brought us dangerously close to having a Commission which could not have mustered a quorum. Just last year, we were within about a month of a time when only one Commissioner could have legally sat, and he would have done so only because of the one-year "grace period."

Mr. Chairman, such a situation could be disastrous for producers. Most of the work of the Commission involves individual pipeline rate cases, initiated by interstate pipelines which purchase and/or transport our production.

As the law now stands, unless initial Commission action is taken on a rate filing within 30 days, the pipeline proposal automatically goes into effect without hearing or consideration. This would happen absent a quorum. I'm sure you can understand this would be totally unacceptable for producers -- and in many cases, consumers as well.

The legislation before you would help relieve this situation, although not guarantee an end to the problem entirely. As long as Commission members can resign before their terms expire -- something that has happened all too often -- then there is no guarantee that we won't have a "bunching" of vacancies in the future.

Nevertheless, we believe the bill, which would increase the five Commissioners' terms to five-years with one term expiring each year, should be adopted. Provided Commissioners do serve out their terms, this proposal would provide for an optimum of continuity at the Commission.

In fact, Mr. Chairman, I would hope the Committee would make this point as strongly as possible during Commissioner confirmations in the future. If an appointee does not intend to serve a full term, maybe that should be taken into consideration during the confirmation process.

Moving on to S.389, introduced by Senators Bingaman and Boren, we would like to commend them for their interest in achieving greater focus on natural gas within the structure of the Department of Energy.

As we reviewed the pros and cons of this legislation -- legislation to create an Assistant Secretary for Natural Gas -- we had the opportunity to reflect back upon the energy world in 1977 -- the time when DOE was created.

At that time, you will recall, "conventional wisdom" included the following:

- As a nation, we were running out of natural gas and all that could be done was call on the FERC to "shepherd the shortage" until natural gas was used up -- saving it as long as possible for residential customers.
- Continue to prepare ourselves for ever higher oil prices.
- Control the wellhead prices of both domestic crude oil and natural gas.
- Do everything we could to use more coal -- a fossil fuel that can be found in ample abundance domestically.
- Mandate conservation.
- Press ahead rapidly on developing exotic and renewable sources of energy.
- Look to nuclear power plants as the major source of new electrical generation.

As a result of this "wisdom," we created the Economic Regulatory Administration (ERA) within the DOE to regulate crude oil and products. Then we reorganized the Federal Power Commission, called it the FERC, and turned natural gas regulation over to it.

Nuclear energy was given an Assistant Secretary and conservation and renewable energy was designated as the subject for an Assistant Secretary

Then we created the Assistant Secretary for Fossil Energy. While crude oil and natural gas are fossil fuels, because much of the action for these two fuels was being handled by the FERC and ERA, coal became the primary focus of this agency by default.

Currently coal dominates the agency. This probably is due in part to the large commitments of federal monies for research into clean coal technology, while most crude oil research is handled by private industry and natural gas research is handled privately and through the Gas Research Institute through a levy on natural gas sales.

At the same time, we see the domestic drilling industry in serious trouble due to OPEC pricing policy. In the interest of national security we need to find someway to stimulate the search for crude oil and natural gas domestically.

And, with growing concern about the environment -- problems of acid rain and ozone depletion -- and because we have turned our backs on nuclear generated electricity, natural gas as the "fuel of the future" is as much in "vogue" today as "we're running out of natural gas" was ten years ago.

This all leads to what appears to be a change in priorities, and, as such, we should consider reorganizing the DOE to reflect those changes. For example, just this past January, DOE authority over natural gas imports was transferred from the ERA to Fossil Energy. Independents view this as an important function and one which should have the fullest possible attention of an Assistant Secretary.

As Senator Bingaman said on February 8 when he introduced these bills, there are two ways to accomplish this change in emphasis -- either administratively or by Congressional action. We have no strong preference as to how it is accomplished. If the Secretary of Energy can do the job administratively, fine. If not, then a version of S.389 should be considered.

As I said in the opening of this statement, Mr. Chairman, IPAA represents the independent crude oil and natural gas producer/explorer of this country. Therefore, I would ask that any newly focussed agency within DOE not just address natural gas, but domestic crude oil and natural gas.

This position is not only a political one within the industry, it is an essential one. While natural gas holds out much promise and needs all of our attention and encouragement, domestically produced crude oil remains, and will remain, a vital element of our energy mix. While new onshore fields are not as promising as they once were, the fact that more than half of the potentially recoverable reserves of crude oil are being left in the ground absent new technology, is something that should be given a high priority in our search for secure, economical sources of energy. Both domestic crude oil and natural gas need a greater focus and emphasis at the DOE

As I said, we do not have a strong preference as to how this might be accomplished. To do it Administratively would by necessity have the effect of lessening emphasis for something else -- renewable, conservation, coal or nuclear -- and I do not want to suggest who should be the "loser" so we might win.

Therefore, it might be easier to add a position legislatively, even though some might resist that approach as an "unnecessary bureaucratic expansion." Let me say, the relatively small cost of creating an Assistant Secretary for Domestic Crude Oil and Natural Gas would be insignificant when compared to the expected gains from a more focused approach to the optimum production and utilization of these two premium sources of energy.

Thank you for this opportunity to be heard and please let us know how we can be of help in successfully resolving these two issues.

Senator BINGAMAN. Thank you very much.

Mr. Lawrence, we are very glad to have you here.

STATEMENT OF GEORGE H. LAWRENCE, PRESIDENT, AMERICAN GAS ASSOCIATION

Mr. LAWRENCE. Thank you, Senator.

The American Gas Association very strongly supports both 388 and 389 as necessary and positive steps. I have a more complete statement that I would appreciate being incorporated in the record.

Senator BINGAMAN. We will include the entire statement in the record.

Mr. LAWRENCE. S. 388 by providing five-year staggered terms for FERC in our opinion will enhance, as Senator McClure pointed out will not cure—there are few panaceas in the energy business, but we think will enhance—continuity and help ensure a situation where FERC will be left without a quorum.

Turning now to S. 389, it is kind of hard not to recognize the points that Mr. Bush made with respect to Secretary Watkins and Henson Moore as wanting a little time to get their hands around the Department and submit some of their organization plans. And I am sure, Senator, that you and your colleagues would be very attentive to those moves, as you have expressed earlier.

Having said that, though, AGA has been a long-time supporter of the need for an Assistant Secretary for Natural Gas. We sent a letter to Secretary Duncan in 1979 to that effect. And I think if it had been handled administratively then, I think we would be farther ahead in many, many ways.

I believe in introducing S. 389, Senator, you put it this way, as you expressed again today in your opening remarks: that when the Department of Energy was created natural gas was viewed as a resource in very limited supply and one that was "thought to be part of the nation's energy problem and not part of the solution."

And I think today we know that is not the case. It is very clearly a part of the solution. It is one of the key energy solutions to stepping up to some very significant national priorities of energy security, of environmental compliance and competitiveness in our industrial and manufacturing infrastructure.

Now, what we think S. 389 can do—and we certainly hope that there will be a confluence of agreement of opinion when the Secretary and Deputy Secretary Moore submit their views on that. But what we see this Assistant Secretary as doing, it would facilitate and ensure a coordinated and consistent natural gas policy within the Department of Energy and throughout the government.

As you pointed out, we have very limited and minute amounts of gas-related research, money devoted for that purpose today, and yet it can make a very major contribution.

It is recognized by majors and independents alike and think tank people that the lower 48 state resource base is becoming increasingly gas-prone, as distinct from oil-prone. We know what gas-related research, particularly in the geoscience area, in the areas of free methane from coal seams that Senator Domenici pointed out, and many other areas, that you offer the prospects of very, very major supply side contributions. There are equally important demand side contributions.

For example, as far as inter-agency coordination, we can see this as being very helpful with the Environmental Protection Agency, where natural gas again is being recognized as part of the solution and not part of the problem.

I think instead of just beating up on coal and nuclear and OCS leasing, I think the EPA and environmentalists, with their increasing confidence in long-range gas supply, are looking to some of the affirmative contributions that natural gas can make.

So a Department of Energy coordination with EPA through a focal point is very, very vital to what is acknowledged as a national priority, and that is cleaning up the environment.

Let us look at the Department of the Interior, which has to do with the leasing on public lands. We had quite a fly-up last year between the USGS and DOE over some resource base estimates. I think that could have been resolved much better and probably much more in the overall public interest if there had been better coordination. If we had a focal point at the Department of Energy, I think that might well have happened.

The Commerce Department, we are talking about trade, how we can be more competitive. Natural gas energy is a very efficient energy to serve our industrial machine, and we think we can generate electricity a lot more efficiently and economically. So you have got a double contribution to this area of competitiveness.

What DOE can do with the Commerce Department by focusing on natural gas could be very significant.

Transportation and speaking of the use of natural gas as a transportation fuel, it is recognized now as a clean air contributor. We have our major metropolitan areas where they are becoming in a non-attainment status as far as ozone is concerned, and the contributions that natural gas can make for mass transit buses, fleet vehicles, and maybe eventually the passenger cars.

And really, focus on again these two national priorities of reducing oil imports—and right now most of our transportation structure is dependent upon oil. But if we can really increase this contribution that natural gas vehicles can make, it can aid those two national priorities, reducing imported oil and improving the environment.

Defense Department. I have heard the National Coal Association President and former Air Force General Dick Lawson make the comment that we probably ought to have an Assistant Secretary of Energy at the Department of Defense. Well, I will leave that to another hearing, but I think the contribution that natural gas can make to more efficient use of energy here in the United States and also as a transportation fuel for non-tactical vehicles could be very significant.

Same thing for the U.S. Trade Representative. We are going to be implementing the U.S.-Canadian Free Trade Agreement. Perhaps we will have other Free Trade Agreements, perhaps with people on the North American continent, other countries, and the coordination there could be very significant.

The same thing with HUD. It is your biggest source of energy for heating residential areas in this country, and many of our gas distribution companies are engaged in upgrading some of the—and participating in things that Secretary Kemp calls enterprise zones. And I think if there were a focal point for the contribution natural gas could make, we would see some improvement there.

Now, of course I think the increased liaison that natural gas energy would have with Congress would be improved if there were a focal point in the Department in an Assistant Secretary.

Well, I think suffice it to say, Senators, this reorganization has I think wide industry support. I would add that the National Association of Regulatory Utility Commissioners, their Gas Committee, went on record as supporting the creation of this office, your legislation setting up a new Assistant Secretary for Gas.

I would just make this final point. The World Gas Conference was held in Washington, D.C., last June. We had representatives from 55 nations, over 4,000 people from all over the world.

We had the key principal spokesmen of the natural gas industries in all the major countries, and to a person they all made the point that natural gas was going to be an increasing part of their energy mix.

Now, few if any of those countries have our huge natural gas resource base, and none of them have our delivery system, our million mile plus pipeline distribution system, our storage system that is more than the equivalent of the strategic petroleum reserve if we ever get the maximum amount filled.

And we use it every year. This is a national asset and it deserves a focal point in our Department of Energy to see that it is indeed capitalized on.

So again, we support both S. 388 and S. 389. Thank you.

[The prepared statement of Mr. Lawrence follows:]

TESTIMONY OF
GEORGE H. LAWRENCE, PRESIDENT
AMERICAN GAS ASSOCIATION
BEFORE THE
COMMITTEE ON ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE
ON S. 388
A BILL TO PROVIDE 5-YEAR STAGGERED TERMS
FOR THE FEDERAL ENERGY REGULATORY COMMISSION
AND ON S. 389
A BILL TO AMEND THE DEPARTMENT OF ENERGY
ORGANIZATION ACT

April 17, 1989

INTRODUCTION:

Good afternoon. I am George H. Lawrence, President of the American Gas Association (A.G.A.). On behalf of A.G.A.'s 250 gas distribution and transmission companies, I am pleased to present this testimony on two very significant legislative proposals, S. 388 and S. 389, introduced by Sen. Jeff Bingaman (D-NM).

We view both of these measures as positive and necessary steps to ensure that natural gas is allowed to take its proper role in this nation's energy mix and to achieve our energy national security and environmental goals as well. S. 388, by providing five-year staggered terms for the Federal Energy Regulatory Commission, should ensure that FERC will not be left without a quorum to implement Commission action. S. 389, by creating an assistant secretary for natural gas within the Department of Energy, will centralize federal policy with regard to natural gas and should lay to rest once and for all an "energy triad" that ignores natural gas. In short, A.G.A. endorses both S. 388 and S. 389, and Sen. Bingaman is to be congratulated on his leadership in introducing these bills.

S. 388

This bill would amend the Department of Energy Organization Act to provide for 5-year staggered terms for members of the FERC. Current law (42 U.S[illegible] §7134) provides merely that there will be five Commissioners, one of whom is the Chairman. This section also provides for a level of compensation for the Commissioners and Chairman. Last year the FERC was facing a number of vacancies at the Commissioner level that threatened to result in the lack of a quorum. This situation arose, in part, because the DOE Organization Act prohibits any Commissioner from serving in office more than one year after his or her term expires. The Chairman and one Commissioner were holdovers whose terms expired in 1987. Two other Commissioners had terms that were set to expire on October 20, 1988. A fifth Commissioner had indicated for some time his desire to resign.

Thus, last year we were faced with the prospect that, by October, the Commission might not have any Commissioners or a chairman. We expressed our concern to Kenneth

Duberstein, Deputy Chief of Staff to the President, in a letter on April 5, 1988. Joining us as cosignatories on that letter were the heads of the Interstate Natural Gas Association of America, Independent Petroleum Association of America and Natural Gas Supply Association. As we stated, "our concern and that of the segments of the natural gas industry we represent is that the Commission's caseload and dockets be processed without disruption and the Commission's governance be uninterrupted. If a quorum is lost, the Commission will be unable to take even routine regulatory actions which are essential to the industries it regulates."

This concern applies not only to the segments of the gas industry regulated by the FERC, but it also has obvious application to consumers who pay for the gas sold and transported subject to FERC jurisdiction. Without the expeditious treatment of the many matters pending before the Commission, including rate cases, settlements, new pipeline construction and other related issues, the natural gas industry would have been severely crippled.

Although the FERC now has a quorum, this unusual situation could certainly arise again without ameliorative efforts by Congress to prevent its recurrence. For that reason, A.G.A. commends S. 388 to this Committee and urges its passage. This country's natural gas industry cannot be permitted to grind to a halt because of a lack of a quorum at FERC.

S. 389

As stated above, A.G.A. believes S. 389 will enable the industry to play a vital role in accomplishing this nation's overall economic, environmental and national security goals. In his statement introducing S. 389, Sen. Bingaman noted that, when DOE was created, the general view was that natural gas was a resource in limited supply and one that was "thought to be part of the [nation's energy] problem, not part of the solution." Of course, we now know that the natural gas resource base is sound, as was confirmed in the landmark study on natural gas supplies by the U.S. Department of Energy entitled, An Assessment of the Natural Gas Resource Base of the United States. The study found that in the lower 48 states alone, the proven reserves and currently undiscovered supplies total 1,059 trillion cubic feet. At today's level of nationwide gas consumption, this amount is equivalent to a 62-year supply.

Sen. Bingaman further observed that, ". . . by creating an assistant secretary for natural gas, the new [Bush] administration has an opportunity to refocus departmental attention onto natural gas policy. This shift would be consistent with the recognition that gas can and should play a much larger role in the country's energy picture."

Sen. Bingaman's remarks are consistent with a view we at A.G.A. have been advocating since 1979. In fact, creation of an assistant secretary for natural gas is an initiative A.G.A. first recommended in an August, 1979, letter to then-Secretary Charles W. Duncan. A.G.A. recommended creation of an assistant secretary for natural gas, and we outlined the benefits of consolidation of all natural gas functions within DOE under a single assistant secretary:

> Such a move would enhance--rather than impede--the ability of gas energy to make its optimum contribution which is considerable, measurable and attainable. . . . Our major concern is that since DOE's creation, there has been no single individual with the overall responsibility to coordinate all DOE functions of critical importance in developing and utilizing gas energy. It is, in a way, "everybody's business" which has traditionally had a way of becoming "nobody's business."

The situation remains the same now as in 1979--there is no central administrative position for federal natural gas policy development and implementation.

Existing legislative authority in the DOE Organization Act provides for eight assistant secretaries and gives the Secretary discretion in designating the titles and responsibilities, provided that the responsibilities in total include--"but are not limited to"--eleven specific functions. Under S. 389, we foresee the Assistant Secretary as having programmatic responsibility for natural gas within DOE, and overall responsibility for coordinating a consistent natural gas policy within the Department and throughout the government. Such reorganization would also result in increased institutional expertise on natural gas within a more focused bureaucracy. This policy would greatly enhance federal efforts in research and development (R&D), import/export issues and accurate assessments of the natural gas resource base.

Under the present organizational structure at the Department of Energy, natural gas-related functions are spread across many offices. This lack of focus has inhibited the full development and utilization of natural gas and has created accountability problems as well. Perhaps the best example of this problem is in the area of energy research and development. The Assistant Secretary for Fossil Energy has responsibility for natural gas, petroleum, and coal research and development activities. However, out of a Fossil Energy R&D budget of roughly $380 million in FY 1989, only $11.5 million is for the unconventional natural gas recovery program. Slightly more, or roughly $38 million is for petroleum R&D. The rest is for coal-related activities. And this does not even include funding for the Clean Coal Technology program over which the Assistant Secretary for Fossil Energy also exercises jurisdiction. Clearly, given the magnitude of the coal budget, the Office of Fossil Energy must focus increasing attention to coal-related activities, which may in turn divert needed attention away from the pressing concerns of natural gas. In short, DOE's current organization has not adequately served the needs of gas R&D.

The Assistant Secretary for Fossil Energy, while having natural gas responsibility, traditionally has focused a major amount of staff resources on management of the Department's coal efforts. In fact, the staff within Fossil Energy is primarily organized to concentrate efforts on coal, and to a lesser extent, oil. Natural gas has traditionally been considered by the Department primarily in connection with oil--as "the tail of the oil dog". It is no small irony that the DOE natural gas initiative in the past two years is largely attributable to its efforts of its Policy, Planning and Analysis Office, which was responsible for overseeing the development of DOE's May 1988 natural gas study referenced above.

Furthermore, the establishment of such a position would provide a better opportunity for the government to speak with one voice with respect to natural gas policy. An example of where centralized policy on natural gas could make a difference includes coordination of all the government's studies regarding the nation's natural gas resource base, such as the one pending at the U.S. Geological Survey. Coordinated and centralized studies of the natural gas industry are vital to ensure that the public, the investment community, utility planners, are not given inconsistent, or what may appear to be inconsistent, assessments of the natural gas resource base. This is especially important where, as was the case in the release last year of the draft USGS report, the preliminary data differed from the DOE May 1988 assessment, primarily because of using different methodologies and assumptions.

Having a high level focus within the Department for natural gas policy development and implementation is important in areas beyond natural gas research and development and natural gas resource base analyses. S. 389 will also give natural gas issues importance on the international level. As you know, A.G.A. supported Congressional ratification of the Canada-U.S. Free Trade Agreement (FTA). We saw it as a means of facilitating access to additional supplies of competitively priced natural gas that could, in turn, displace oil imported from insecure sources. Given the high governmental levels at which the FTA will be implemented in both countries, we believe that transferring FTA functions to an assistant secretary responsible only for natural gas lends additional emphasis to issues that may arise under the FTA.

A reorganized and centralized staff serving under the direction of the Assistant Secretary for Natural Gas, separate from the Assistant Secretary for Fossil Energy, could be an important means of enabling natural gas to assume its role in the nation's energy mix. This reorganization has wide industry support. Moreover, the National Association of Regulatory Utility Commissioners' Gas Committee recently endorsed the concept of an Assistant Secretary for Natural Gas.

Finally, it seems curious to us that anyone would object to the purposes behind S. 389. In an era when conservation and renewable resources issues are elevated to an assistant secretary level status, natural gas, which supplies home heating energy to more than 55 percent of American homes, should likewise be afforded assistant secretary status.

CONCLUSION

As I stated in response to the introduction of S. 389, "During the past year, a number of important events have occurred that make Sen. Bingaman's proposal particularly timely. Among them are the 1988 DOE natural gas resource base study, the department's corresponding emphasis on the natural gas contribution and the prominent attention given to natural gas during the presidential election." S. 389 is an important initiative that merits this Committee's full attention and ultimate endorsement. S. 388, which would ensure a quorum at the FERC, is an ideal legislative complement to S. 389. We urge this Committee to pass each measure.

Thank you for the opportunity of appearing today. I would be glad to address any question you might have.

Senator BINGAMAN. Thank you very much.

I am informed here that the House just passed the natural gas decontrol bill, for any of you who are interested in that.

Mr. CONKLIN. A long fight.

Senator BINGAMAN. Right. Not over yet.

I will just ask any of you who might want to comment. I think we have gotten a lot of good examples of how inter-agency coordination could be improved by an Assistant Secretary for Natural Gas and how there is a real need for that inter-agency coordination. I think Mr. Lawrence just went through a good listing of those.

Are there examples of natural gas policy that the Department should be pursuing or could be pursuing or supporting that it is really not pursuing today, that this Secretary, this Assistant Secretary, might facilitate or give more attention to?

Do any of you have examples you have not mentioned?

Mr. CONKLIN. Mr. Chairman, I am sure it has been mentioned, but the first thing that comes to mind is the way that, hopefully, that this would solve the problem that we have had with the regulation side of the business, as far as focusing more on helping FERC or helping someone.

We would see the Fossil Fuels or the ERA have certain views as far as Canadian gas or Mexican, importing of natural gas, and then another view from FERC. And the rules would be different for gas coming in, have been different for gas coming in from Canada, for instance, versus the rules that I am having to follow trying to compete with them in the California market.

So I think that that possibly could help.

Senator BINGAMAN. You are saying we would have a better chance of speaking with one voice on the issue of natural gas and the policies that we should pursue?

Mr. CONKLIN. I would hope that.

Senator BINGAMAN. Anybody else have a comment? Yes, Mr. Jones.

Mr. JONES. I think that this position would be particularly important with respect to the continuing relationship with Canada, since we have now better defined that relationship under the U.S.-Canadian Free Trade Agreement.

FERC is simply not equipped to deal with some of the same policy issues that the National Energy Board does on the Canadian side, and they really need this kind of a position in order to have a balanced response and the ability to deal with some of the issues on the U.S. side that the NEB is charged with dealing with.

Senator BINGAMAN. Yes, Mr. Bush?

Mr. BUSH. Senator, the one comment I have, the one thing I do worry a little bit about is the concentration on the budget numbers with respect to R&D. I think one of the things that we ought to note, though, and Senator McClure will certainly recall this, is that a good deal of the gas research monies from DOE was rolled off and into the Gas Research Institute a number of years ago.

And if you added in the number of R&D numbers, the amount of money being spent at GRI on R&D with respect to gas, it is fairly significant, unless I misunderstand the numbers, and I do not believe I do. It is well over $100 million.

Senator **Bingaman**. Mr. Jones, do you have a comment on that?

Mr. **Jones**. Yes, I would like to comment on that. The Gas Research Institute operates on the moneys that are recovered from the end users, and in many instances, the way the industry is operating today, from either pipelines or producers.

Nominally they collect about $175 million a year, and it supports about a $155 million a year pure research program. The rest of it is spent on administration and those kinds of things. Those are funds that are collected as end user funds directly, and I think the moneys that would be supplied would be supplementary to those funds.

Certainly I know in my experience as a director of the Gas Research Institute, one of the problems that we have now is simply making the money go around. There needs to be additional matching funds that would come from funds supplied through additional research money made available through DOE.

Senator **Bingaman**. Right.

Let me defer to my colleagues here. Senator McClure.

Senator **McClure**. Thank you very much, Mr. Chairman. Just a couple of things very quickly.

One, I think it is certainly accurate to say the extension of a term from four to five years for FERC Commissioners would establish the opportunity for a little more continuity.

Mr. Bush, I think your comments about the expenses of moving to this area and the difficulty of attracting people to come to this area to work and to live is a very pertinent comment. The extension of terms helps in both directions, I believe.

One of the things that has not been commented upon now is there is not any question that last year the initial nomination was being held hostage to force a renomination. We all know that was true.

The staggered terms of one year would reduce, but not eliminate, the likelihood that there would be two Commissioners coming up at the same time, therefore minimize the temptation or the opportunity to hold one Commissioner hostage to another.

The other side of that question is the opportunity to make certain that packages are put together that fairly balance the interests of different people. And unless you have more than one coming up at a time, you focus on that one, and that portion of the industry that then has the greatest clout perhaps has the greatest opportunity to get more representation on FERC as contrasted with those who have less current political leverage on the system.

Which is more important to us in these instances, the elimination of the impasse that we had last year or the loss of the opportunity to provide packages that trade off and balance one interest against another?

Mr. Jones?

Mr. **Jones**. I will be happy to try to tackle that, having shared a part of that experience. A person that is ideal to bring to the Commission, while they may not have a great deal of expertise in any given area, most of them come to the Commission with a relatively small amount of particular expertise in any of the areas, specific. The rules say that you cannot bring an executive out of an industry and put him on the Commission, or a lawyer directly out of the industry.

Senator McClure. That is another problem.

Mr. Jones. It is indeed another problem that is worthy of some attention, I believe.

I think that a well qualified Commissioner who is able to deal with the kind of issues which are at least quasi-legal, who has enough background in the areas of regulation, can generally come on board and, after some relatively brief period of education, begin to function very effectively as a Commissioner.

So while I understand fully the issue that you are concerned about and legitimately concerned about, I think it is more important that you have the staggered terms and isolate the individual nominations and confirmation of the Commissioners as much as possible from the pure political process of effecting tradeoffs.

Senator McClure. Well, it was an extraordinary process last year and I am sure that your involvement in it would lead you to the avowed hope of never having to do it again.

Any other comments?

Mr. Lawrence. Well, I would certainly hope that the better course would be to make these selections sequentially and not part of a political package. I think so often those do not always turn out the way that the political packagers expect them to anyway, at FERC or the Supreme Court or whatever.

I would come back and again agree that this is not a cure. But I think that it does enhance the continuity and the problem of not having a quorum.

And I think another point, too: I think it would be another vehicle to send a Congressional message to all future administrations that, do not play around with these agencies and leave us in this kind of a situation again.

Senator McClure. And how does the Administration send a message to the Congress?

Mr. Lawrence. Beg your pardon?

Senator McClure. And how does the Administration send a message to the Congress? Because last year it was the Congress playing around that led to the hiatus.

Mr. Lawrence. Got me there. All you can do is send a message. You cannot necessarily control the answer.

Mr. Conklin. Something that would help, Senator, would be to emphasize, as your process, selecting the FERC Commissioners, emphasize the need for them to be very deliberate as far as serving out their term.

Senator McClure. Well, I would hope that that would be the case. And I would also emphasize what I think every one of us knows to be true, and that is we seek a balance on the Commission.

Mr. Conklin. Absolutely.

Senator McClure. We want to have different interests, different backgrounds, different perspectives, so that the composite of five Commissioners gives us a pretty good spectrum of opportunity toward national energy policy. It does not wholly eliminate it by single appointments at a time.

It just simply means that everybody has to recognize that the nature of the game would be changed slightly. Frankly, I do not think the result last year, after it was all over and said and done, was too bad. I think the nation has a pretty good balance on FERC today and it produced a pretty good result, by accident if not by design.

Thank you very much.

Senator **Bingaman**. Certainly.

Senator Burns.

Senator **Burns**. That sort of is a commentary about the government. In spite of itself, it works sometimes, you know.

Let us turn our attention to another area, and I guess it concerns me right off the top, until I am better versed in this. The one piece of legislation that I think, Mr. Jones, that you were favoring was the establishment of an Under Secretary or Assistant Secretary for Natural Gas. I want to ask you to comment, if you would. Cannot administratively in that Department—can a person be designated without being elevated to an Assistant Secretary?

And I am looking at it from affording, number one. And I know that natural gas is very important. It is very important in Montana. We have got a lot of it, and the problem is it is not worth much.

But cannot a person be designated administratively to handle these issues, without elevating an Assistant Secretary with all the staff and the bureaucracy that we create around here, that we do not have much luck at getting rid of once they are created?

Mr. **Jones**. As I point out in my testimony, I think the Administration could create the position without being urged by Congress to do so. I personally support INGAA's position very thoughtfully on that issue.

We as a company were deeply involved in the coal business for a number of years as an owner of Peabody Coal Company, one of the owners of Peabody. So we are familiar with not only that industry, but the situation that coal occupies in your own state, and of course natural gas, too.

Both of them are very, very important sources of energy for the future of this country, and I guess I look at it from the perspective of being concerned not about, not totally about my business problems that I am going to face later this year and next year and years following in my career, but my grandchildren's situation.

I think that in order to have a balance that looks at the long range potential, establishes a strategy, and does a decent job of allocating resources, that both natural gas and coal justify that kind of a position and the staff support that it takes to go with it, to handle the future of those particular resources as well as other resources.

So I share your view and your concern about creating another group of bureaucrats. This is a group where you would have some turnover in the leadership from administration to administration, so you are going to get some fresh points of view.

But in order to bring natural gas into perspective, I think it is going to take that. As I look at the amount of money that is committed to coal, I know how important coal is to this country in the next century. It is extremely important.

But so is natural gas. I think it is justified.

Mr. **Lawrence**. Could I just?

Senator BURNS. Yes, sir.

Mr. LAWRENCE. Senator, I think it is very important that we have an official in the Department of Energy reporting directly to the Secretary or the Deputy with this focal point of responsibility for natural gas. Right now it is an Assistant Secretary for Fossil Energy. They have got coal research, they have got the clean coal program, strategic petroleum reserve, as Senator Bingaman pointed out.

These are important. God knows they are, and we have been quite supportive of them in the gas industry. Too often I think the terms "oil" and "gas" have been used as one word, and that needs to be changed, because gas is becoming a more important resource and a more important contributor.

We had a very important study that came out of the Department of Energy in 1988, an assessment of the supplies, kind of a landmark study. It said we have got a huge resource base that can probably be brought forth at economical prices.

That really emanated from the Office of Policy and Planning of Department of Energy, which happens to report to the Secretary also. But that might have been a product of the personalities. The Office of Policy and Planning has a lot of other things.

We just think, for all the reasons and all the national priorities coming up now—and I do not think it has to be a big bureaucracy. I think there are a lot of places around the government it can coordinate with, but I do think you need this person who reports directly to the Secretary that is responsible for the natural gas contribution.

Senator BINGAMAN. Senator Burns, do you have other questions?

Senator BURNS. No, I do not have any other questions. I just want to know the secret on how to keep that bureaucracy from growing.

Thank you very much, Mr. Chairman.

Senator BINGAMAN. Sure.

Why do we not go ahead and thank this panel. I appreciate your testimony today very much.

I would ask that the third and fourth panels come up together, if we could. We have got four additional people here.

Mr. Raffaniello, I understand you are going to introduce Mr. Light and his testimony, is that right?

Mr. RAFFANIELLO. No, sir. I am here as the Staff Director of the council. I am going to support Representative Light and help answer any questions.

Senator BINGAMAN. Okay, all right. Why do we not go ahead and hear from Mr. Light. We are pleased to have you here, one of my Representatives. I am very honored to have you. You have been a leader in our state and nationally on issues affecting natural gas and oil.

So we are very pleased to have you here.

STATEMENT OF HON. ROBERT S. LIGHT, MEMBER, NEW MEXICO HOUSE OF REPRESENTATIVES, ON BEHALF OF THE SOUTH/WEST ENERGY COUNCIL AND THE SOUTH/WEST ENERGY RESEARCH FOUNDATION, ACCOMPANIED BY PATRICK J. RAFFANIELLO, EXECUTIVE DIRECTOR

Mr. LIGHT. It is a pleasure to appear before your Committee, Senator Bingaman. Mr. Chairman, I want to thank you for allowing me the opportunity to visit with you about energy policy.

My name is Robert S. Light of Carlsbad, New Mexico. I am a member of the New Mexico House of Representatives and an independent oil and gas producer.

With me today is Patrick J. Raffaniello, who is the Executive Director of the South/West Energy Council and the South/West Energy Foundation.

I would like to begin by commending Senator Bingaman for introducing Senate Bills 388 and 389. 388, which would provide for staggered terms for Commissioners in the FERC, addresses a serious problem. Decisions made in the FERC are too important to us in the industry to be stalled because there are not enough Commissioners to form a quorum.

It seems to me personally that staggered membership should have been something from inception, rather than something that needs to be attended to at this time. By providing the staggered five-year term, Senator Bingaman's bill, 388, would help assure continuity and timely consideration of important issues at the FERC.

Natural gas is a domestic resource in abundant supply. Increased use of natural gas enhances the United States' national security.

Further, because of its environmentally benign impacts, natural gas can serve as a link between the nation's current energy situation and its abundant environmental and security problems and a more secure energy future that maximizes energy conservation, renewable energy use and consumption of other energy resources in a clean, efficient manner.

Senator Bingaman, your efforts on behalf of the natural gas producers and consumers are both timely and welcome. Your bill creating an Assistant Secretary for Natural Gas in the United States Department of Energy can provide the stimulus for the Administration and the Department of Energy to highlight natural gas as the United States' cleanest fossil energy resource.

The Administration's Energy Secretary is quoted saying that people who complain that the United States lacks a clear energy policy were wrong. He said the complainers just didn't like the policy.

I feel Mr. Herrington's energy policy lacked directions and substance. Establishing an Assistant Secretary of Natural Gas should be part of a major effort to develop a national energy policy. The United States must develop and enunciate a coherent and internally consistent national energy policy.

Our country urgently needs a national debate on energy and a national consensus on which resources to use, which resources, where to obtain them, and how to use them.

Senator Bingaman, as you know, the New Mexico State Legislature is a founding member of South/West Energy Council. The Council is a public organization for the energy-producing states, consists of four legislators each from the States of New Mexico, Alabama, Alaska, Arkansas, Colorado, Louisiana, Oklahoma, and Texas. I am privileged to serve on the executive committee of that Council.

You will be pleased to learn that just yesterday my colleague and yours, Representative Dick Knowles, Representative Knowles from Chaves County, was elected chairman of the Council.

Last year the South/West Energy Council drafted a comprehensive national energy strategy addressing the energy needs of the entire nation, not just the producing states. We believe that the concerns we propose fairly balance the need for energy, environmental concerns, the producers' interests, and the consumers' interest.

A copy of the proposed energy strategy has been passed out to your Committee, and the one you have is the brief form that I have here, and there is also a documented, more detailed form some 83 pages long here. I would like to call that to your attention.

The national energy strategy was adopted unanimously by the eight member states of the Council in December of this year—of last year, excuse me, this last December. In addition, in joint resolutions the legislatures of New Mexico, Alabama, Alaska, Arkansas, Colorado, Oklahoma, and Texas have endorsed this proposal.

The goal of the strategy is to provide a stable supply of reasonably priced energy in an efficient and environmentally sound manner to meet the needs of the United States citizens, the economy, and the national security. The South/West Energy Council believes that the long-term goal of the understand should be energy independence. It is difficult to come about.

I will take just a few minutes to outline the thrust of our energy strategy. But before I do, I would like to explain why my colleagues and I believe it is essential that the United States develop a comprehensive and internally consistent energy policy.

During the week of February 1989 this year, the United States imported just over 50 percent of the oil we consumed. I find this alarming, because we have allowed the control of this strategic resource to slip away from us without any planning or forethought.

I believe the United States can be secure with a large portion of our fuel sources coming from outside the country, provided—we can be secure, provided that the sources of that fuel from nations that share our democratic ideals, that those nations are stable, have a history of reciprocal trade, and provided that we are importing fuel as a part of a well thought out energy management plan.

To continue to let our imports increase without any forethought or planning invites disaster. The long-term goal of the South/West Energy Council proposed strategy is energy independence.

However, during our studies it became clear that a policy that would rely solely on domestic energy production simply cannot live up to this promise. This nation now sends $4 billion a month abroad for oil, amounting to approximately $50 billion each year, some one-third of our trade deficit today.

Relative to crude oil, the Council developed a three-point policy approach: conservation—that is very important—domestic production, and import management.

Energy conservation is key. Not only does it make economic sense to use our energy resources efficiently, it makes environmental sense as well. We propose that the United States continue to promote energy conservation.

Of course, essential to a U.S. energy policy is a strong domestic energy policy—industry, industry. This industry can and must operate in an environmentally sound manner to develop the resources we have in this nation. We need to support domestic oil and gas exploration with tax incentives, just as we need to support an enhanced oil and gas recovery to assure maximum recovery of those resources already identified, done in the interest of conservation.

The third point with regard to crude is the management of imports. By this we do not mean direct Federal intervention in purchasing foreign crude, but rather common sense tactics to lessen dependency.

One means of doing this is by encouraging the Pan-American Energy Alliance, whereby we would look with Canada, Mexico, and Venezuela, which all have substantial reserves right here in the Western Hemisphere. Another proposal relative to imports is as simple as opening a dialogue with suppliers worldwide, in particular OPEC, which represents three-quarters of the world's reserves today.

In addition, the United States should continue to fill the strategic petroleum reserve. And finally, the Council recommends that the ban on exporting crude oil from Alaska be lifted.

It is also recommended—and I am getting into a rather sensitive area here—that the policy of the Council is to pursue active management of Federal lands and outer continental shelf areas in accordance with the principles of multiple use.

This coincides with the Council's longstanding policy urging exploration and development of ANWR. We are all sensitive to the tragic accident that happened in Alaska, and I think that we should expect oil spills, not only now but in the future.

We had one on the coast of France and on the news this morning they pointed out that that has—almost nature has taken care of it, Mother Nature has done it, and it was five times as large as this one in Alaska.

So far I have focused on relatively short-term policy dealing with conservation and crude oil. However, it will take a combination of other fuels and technologies to meet our long-term goal of energy independence.

For instance, coal is America's leading fuel in terms of reserves. Coal holds the promise for long-term energy security. But today its use is constrained by age, technology, and environmental concerns. That is probably why we see most of the money for research and development being spent in the coal area.

The clean coal technology program is a demonstration program funded by Federal and private dollars, to dramatically reduce emissions while improving the efficiency of coal use. The coal clean technology program is supported wholeheartedly in the national energy strategy.

Natural gas is an extremely important component of our energy mix. This domestic resource is more plentiful prior to assessments indicated—it is more plentiful than prior assessments had indicated. We have all heard that in testimony here today. Importantly, it is clean-burning and efficient.

The Council recommends promoting the domestic production and use of natural gas and pursuing the development of natural gas in gas, compressed natural gas-fueled vehicles.

I would like to point out—well, I have one more page to go, but I would like to point out at this point that the DOE's report whereby they reported back to this nation that we had 1100 trillion, 1100 trillion, cubic feet of gas in reserves, that is at a certain price.

We have lots of reserves of coal and gas and potash and every other mineral at a certain price. But I question somewhat the testimony I heard when we have proved reserves today of 156 trillion of that 1100 trillion—that is the proved reserves today—that without exploration you will not get much more than that out of the ground.

You have got to have drilling activity to remove that gas from the ground, and drilling activity is contingent on price. And until we see exploration, we will not be increasing our present reserves up to that 1100 trillion level.

Renewable energy resources are characterized by a broad range of technologies, costs, efficiencies, and environmental concerns. The national energy strategy recommends that work on these technologies be pursued in a cooperative effort among industry, higher education, and the national laboratories. That is industry, higher education, and the national labs.

This effort is already being pursued today in New Mexico. I would like to report that back to you.

Although not an energy source, electricity is also addressed in our energy strategy. We urge that regulation of electric power companies with regard to questions like fuel choice, rates, system reliability be maintained at the state level, where regulators are closer to the consuming public.

Just as long-term planning is critical to assuring sufficient energy supplies, also it is key to avoiding or minimizing environmental impacts. In fact, that is why energy conservation was given premier billing in our energy strategy.

By saving energy, we avoid environmental impacts. By planning ahead, we minimize adverse environmental impacts. Environmental impacts are minimized by fuel choices, gas being one of the cleanest fuels, and improved technology and careful, planned project siting.

In the final selection of energy strategy, titled "Implementation," we note that the development of environmentally sound energy conservation, supply, and distribution systems require long-range planning and sustained effort.

Our national energy strategy is a starting point for Federal consideration. We do not expect it to be accepted in its entirety unchanged, but we recognize it is much easier to edit a proposal than to start from scratch.

The Council's national energy strategy was developed through a bipartisan effort of state legislatures, representing diverse constituencies. We are seeking the support of both parties in states from all regions of the United States. Energy policy is not a regional issue. It is a national priority.

Thank you for your attention. I appreciate your indulgence, and I welcome any questions.

[The prepared statement of Mr. Light follows:]

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Before the United States Senate
Committee on Energy

Testimony of
New Mexico State Representative Robert S. Light

Representing
The South/West Energy Council
and
The South/West Energy Research Foundation

17 April 1989

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Mr. Chairman, thank you for allowing me the opportunity to visit with you about energy policy this afternoon. My name is Robert S. Light; I am a member of the New Mexico House of Representatives. My district is in the City of Carlsbad, New Mexico. I am addressing you this afternoon as a member of the South/West Energy Council. The Council is the public policy organization for the energy producing states. The Council consists of legislators from New Mexico, Alabama, Alaska, Arkansas, Colorado, Louisiana, Oklahoma, and Texas.

I would like to begin by commending Senator Bingaman for introducing Senate Bills 388 and 389. S.388, which would provide for staggered terms for commissioners of the Federal Energy Regulatory Commission, addresses a serious problem at the FERC. Decisions made at the FERC are too important to be stalled because there are not enough commissioners to make a quorum. By providing for staggered, five-year terms for commissioners, Senator Bingaman's bill will help assure timely consideration of important issues at the FERC.

Establishing the position of Assistant Secretary for Natural Gas at the United States Department of Energy is an excellent idea. The South/West Energy Council wholeheartedly supports the proposal embodied in S.389. Natural gas is a domestic resource in abundant supply. Increased use of natural gas enhances the United States national security. Further, because of its environmentally benign impacts, natural gas can serve as a link between the nation's current energy situation, with its attendant environmental and security problems, and a more secure energy future that maximizes energy conservation, renewable energy use, and consumption of other energy resources in a clean, efficient manner.

Establishing an Assistant Secretary for Natural Gas should be part of major effort to develop national energy policy. Last year, the South/West Energy Council, through our research affiliate, the South/West Energy Research Foundation, embarked on a project to draft a comprehensive national energy strategy, addressing the energy needs of the entire nation, not just the producing states. We held a series of workshops and heard everyone from the President of the Renewable Energy Institute to the President of Mobil Exploration; and from the New York State Energy Officer to the Chairman of the California Energy Commission.

A copy of the our proposed National Energy Strategy has been distributed to you. The Strategy is three pages long, and addresses energy conservation, crude oil, coal, natural gas, renewable energy, and electricity. We also produced a background paper to provide greater detail regarding the issues addressed in our National Energy Strategy.

The National Energy Strategy was adopted unanimously by the eight member states of the Council in December. Additionally,in Joint Resolutions, the General Assemblies of New Mexico, Alabama, Alaska, Arkansas, Colorado, Oklahoma, and Texas have endorsed this proposal.

The goal of the Strategy is to provide a stable supply of reasonably priced energy in an efficient and environmentally sound manner to meet the needs of United States citizens, the economy, and national security interests. The South/West Energy Council believes that the long term goal of the United States should be energy independence.

I will take a few minutes to outline the gist of our National Energy Strategy, but before I do, I would like to explain why my colleagues and I believe it is essential that the United States develop a comprehensive and internally consistent energy policy.

During the last week of February, the United States imported just over fifty percent of the oil we consumed. I find this frightening, because we have allowed control of this strategic resource to slip away from us without any planning or forethought. I believe the United States can be secure with a large portion of our fuel sources coming from outside our country, ***provided*** the sources of that fuel are from nations that share our democratic ideals, have a history of reciprocal trade, and provided we are importing fuel as part of well thought out energy management plan.

Obviously, Canada is a nation with whom we want to encourage energy trade. Our common border, our significant trade relations, and our common interests make energy trade desirable for both of our nations.

The United States also shares a common border with Mexico. Without positive trade and relations with Mexico, the investment by United States money center banks is at risk. More alarming, considering the extent of the United States - Mexican border, potential social problems in Mexico would certainly spill over into the United States.

A delegation of Council members visited Venezuela as guests of the state owned oil company, Petroleos de Venezuela. This is a democratic country with strong ties to the United States that is building stronger ties through their program of joint ventures with American petrochemical companies.

I am reviewing these ties within the Western Hemisphere to highlight my belief that we can manage our imports provided we have a national energy strategy.

To continue to let our imports increase without any forethought or planning invites disaster. Unquestionably, the Middle East contains the greatest oil reserves and the United States needs access to those reserves. But to rely solely on the governments of the Arabian Gulf to ensure tranquillity and provide our fuel supplies is foolish. Just look at Iran's reaction to Salmon Rushdies' book the ***Satanic Verses***. The leaders of Iran are willing to forego normalized diplomatic relations and billions of dollars in aid vital to rebuilding their war ravaged country in order to impose a death sentence on a British writer.

I would like to tell you about the Council's recommendations for the United States' energy policy. The long term goal of our strategy is energy independence. However, in our discussion, it became clear that a policy that would rely today solely on domestic energy production simply can not live up to its promise. This nation now sends four billion dollars a month abroad for oil.

Relative to crude oil, a three point policy approach emerged: conservation, domestic production, and import management. Energy conservation is key; not only does it make economic sense to use our energy resources efficiently, it makes environmental sense as well. We proposed that the United States continue to promote energy conservation.

Of course, essential to American energy policy is a strong domestic energy industry. This industry can and must operate in an environmentally sound manner to develop the resources we have in this nation. We need to support domestic oil and gas exploration with tax incentives, just as we need to support enhanced oil and gas recovery to assure maximum recovery of those resources already identified.

The third point with regard to crude oil is the management of imports. By this we do not mean direct federal intervention in purchasing foreign crude but rather common sense tactics to lessen dependency. One means of doing this is by encouraging a Pan American Energy Alliance. Canada, Mexico, and Venezuela all have substantial reserves right here in this hemisphere.

Another proposal relative to imports is as simple as opening a dialogue with suppliers worldwide, particularly, OPEC, which represents three-quarters of the world's reserves. In addition, the United States should continue to fill the Strategic Petroleum Reserve. And finally, the Council recommends that the ban on exporting Alaskan crude oil be lifted.

It is also the recommended policy of the Council to pursue active management of federal lands and Outer Continental Shelf areas in accordance with the principals of multiple use. This comports with the Council's long standing policy urging the exploration and development of the Arctic National Wildlife Refuge.

So far, I have focused on relatively short term policies dealing with conservation and crude oil. However, it will take a combination of other fuels and technologies to meet our long term goal of energy independence. For instance, coal is America's leading fuel in terms of reserves.

Coal holds the promise of long-term energy security. But, today, its use is constrained by aged technology and environmental concerns. The Clean Coal Technology Program is a demonstration program, funded by federal and private dollars, to dramatically reduce emissions while improving the efficiency of coal use. The Clean Coal Technology Program is supported wholeheartedly in the National Energy Strategy.

Natural gas is an extremely important component of our energy mix. This domestic resource is more plentiful than recently thought. Importantly, it is clean burning and efficient. The Council recommends promoting the domestic production and use of natural gas and pursuing the development of natural gas fueled vehicles.

Renewable energy sources are characterized by a broad range of technologies, costs, efficiencies, and environmental concerns. Renewables represent a diverse group of energy sources that need a long term, stable program to research, develop, demonstrate, and commercialize the most promising of these resources.

The National Energy Strategy recommends that work on these technologies be pursued as a cooperative effort among industry, higher education, and the national laboratories.

Although not an energy source, electricity is also addressed in our energy strategy. We urge that regulation of electric power companies with regard to questions like fuel choice, rates, and system reliability be maintained at the state level, where regulators are closer to the consuming public.

Further, we specifically addressed two important points with regard to nuclear power. First, that a federally, acceptable, standardized nuclear powerplant design be established and, second, that a federal program for storage and disposal of spent nuclear fuel be finalized as quickly as is safely possible.

Just as long term planning is critical to assuring sufficient energy supplies, so also is it key to avoiding or minimizing environmental impacts. In fact, that is why energy conservation was given premier billing in our Energy Strategy. By saving energy, we avoid environmental impacts. By planning ahead we minimize adverse environmental impacts. Environmental impacts are minimized by fuel choices, improved technology, and careful project siting.

The United States must develop a national energy strategy. Our country urgently needs a national debate on energy and a national consensus of which resources to use, where to obtain them, and how to use them. The South/West Energy Council hopes that our proposed strategy will initiate that debate. We believe that the recommendations we propose fairly balance the need for energy, environmental concerns, the producers' interests, and the consumers' interest.

In the final section of Energy Strategy, titled ***Implementation***, we note that the development of environmentally sound energy conservation, supply, and distribution systems require long range planning and sustained effort. Our National Energy Strategy is a starting point for federal consideration. We do not expect it to be accepted in its entirety, unchanged, but we recognize that it is much easier to edit a proposal than to start from scratch.

The Council's National Energy Strategy has already been hand carried to President Bush and is now being distributed to key members of both the House and Senate. As a bipartisan effort, we are seeking the support of the leadership of both parties. I hope to earn your support.

Thank you for your attention. I would welcome any questions or suggestions.

Senator **Bingaman**. Thank you very much. I appreciate your testimony.

Let us all hear from the remaining two witnesses before we have any questions. Mr. Charles Curtis, who is former Chairman of the Federal Energy Regulatory Commission, and now a partner in Van Ness, Feldman, Sutcliffe, and Curtis, P.C. We are very pleased to have you here. Thank you for coming.

STATEMENT OF CHARLES B. CURTIS, FORMER CHAIRMAN, FEDERAL ENERGY REGULATORY COMMISSION; PARTNER, VAN NESS, FELDMAN, SUTCLIFFE & CURTIS

Mr. **Curtis**. Thank you, Mr. Chairman. I was pleased to respond to your request and that of Senator Johnston to testify on this matter.

As you mentioned, I have the honor of having been twice nominated and confirmed by this Committee to the Federal Energy Regulatory Commission, so I have some experience with both the work of that agency and the provisions of the Department of Energy Organization Act that govern the terms of office.

I will be mercifully short. I have a written statement that I submit for the record.

Senator **Bingaman**. We will include that in its entirety.

Mr. **Curtis**. The short of my statement is that I wholeheartedly support S. 388 and urge its enactment. I believe it will allow for more consistent and informed judgment and improve an opportunity for experience and therefore some hope for expertise in the Commission's decisions.

This should both improve the perception and the actuality of informed judgment at the Commission. I think it needs to be done, and I commend you for bringing the matter before the Committee.

Let me mention one thing in response to an issue that Senator McClure raised. I certainly agree that this provision is not a cure for the problems of maintaining a quorum and continuity at the Commission. I do believe it would improve that.

But I wanted to point out one thing that previous witnesses have not mentioned, and that is that, by reason of the original terms of the Department of Energy Organization Act, two terms of the Commissioners conclude on October 20th of a presidential election year.

So that each presidential election year, some two weeks before the election two members of this Commission's terms will expire under existing law. Now, certainly if you have a circumstance of an outgoing President, both that outgoing President may lose interest in the nomination process or the Senate may be reluctant to confirm for four-year terms nominees of an outgoing President.

Similarly, even if the President is seeking re-election, as sometimes happens, a Senate of different party affiliation may not have great enthusiasm for confirming the nominations of an outgoing—of a President of a different party who is just two weeks short of the people's confirmation in office through the electoral process.

So as a consequence, there is an inherent flaw in the Act, and I recommend to the Committee that it cure that flaw now that it has this opportunity.

Thank you, Mr. Chairman.

[The prepared statement of Mr. Curtis follows:]

Statement of Charles B. Curtis, Esquire
of Van Ness, Feldman, Sutcliffe & Curtis
Before the United States Senate
Committee on Energy and Natural Resources

This written statement is submitted in support of the Federal Energy Regulatory Commission Member Term Act of 1989 (S. 388), which provides for five-year, staggered terms for members of the Federal Energy Regulatory Commission.

Having served as the first Chairman of the Federal Energy Regulatory Commission ("Commission"), I am pleased to have the opportunity today to testify in support of this much needed reform legislation. By establishing longer, staggered terms of fixed duration for Commission members, S. 388 would remedy a problem that has existed since the Commission was established by the Department of Energy Organization Act (P.L. 95-91) in 1977.

The structural defects inherent in the DOE Organization Act have created potential obstacles to the smooth transition from one Commission member to the next that jeopardize the efficient operation of the Commission. As enacted, Section 401(b) of the DOE Organization Act provides for a Commission composed of five members, appointed by the President, who are to hold terms of four years each. The terms of the original Commissioners were to expire as follows: two at the end of two years, two at the end of three years, and one at the end of four years. Therefore, of the original five-member Commission on which I served, four of the five members' terms were designed to expire within the term of the appointing President.

The organizational structure of Section 401(b) has resulted in the following unintended effects. First, the fact that two Commission memberships expire simultaneously assures that if a stalemate results in the appointment of new Commissioners with concurrent expiring terms, the presence of a quorum on the Commission could be imperiled. This problem becomes exacerbated where the terms of two additional Commissioners expire in successive years. Indeed, this very thing occurred during the last Congress, after one Commissioner resigned, two were sitting as holdovers, and the terms of the other two were about to expire. The potential governance crisis that was only narrowly averted last year should not be allowed to recur.

Second, and perhaps of greater importance, is the relationship between the terms of the Commissioners and that of the President. As required by Section 401(b), the four year terms of two Commission members are designed to expire in cycles which nearly coincide with the end of the fourth year of the President's term of office. In fact, there is only about two weeks between the expiration of two Commissioners' terms on October 20th and Presidential election day. If the President is not seeking reelection and is on his way out of office, the Senate may be reluctant to confirm an outgoing President's political appointees. Even if a President may be seeking reelection, his nominations in the last few months of his term may run into difficulty, particularly where the majority of the

Senate is of a different political affiliation than the President. In any event, if two Commissioners' nominations become stalled, the absence of even one other Commissioner due to illness or retirement prevents formation of the quorum necessary to conduct the Commission's business.

The proposed legislation would remedy the above concerns by amending Section 401(b) of the DOE Organization Act to provide for fixed, five-year, properly staggered terms of Commission members. The advent of a five-year term would reduce the frequency of turnover of Commission members, with a resultant positive effect on maintenance of a quorum. In addition, properly staggered terms, in which no more than one member's term expires in any one year, also reduces the need to counterbalance competing nominees according to the "constituencies" they are perceived to represent.

Enactment of S. 388 should also result in increased continuity of decisionmaking at the Commission. The importance of continuity cannot be overemphasized for an independent agency with a mandate as broad as that of the Commission. The jurisdiction of the Commission spans the energy spectrum; under Section 402 of the DOE Organization Act, the Commissioners' authority includes responsibility over hydroelectric power, electric energy, natural gas, oil pipelines, and energy company mergers and acquisitions. Moreover, final decisionmaking authority on any disputed matter is nondelegable to Commission staff. Thus, a Commissioner's ability to cultivate expertise and experience in a vast array of highly technical subjects is essential to effective decisionmaking. A fifth year will promote the individual member's ability to gain such expertise, and staggered terms will prevent the Commission from suddenly losing such collective knowledge all at once.

Continuity is also important from the point of view of the business community and the public generally. Investors in energy interests need to have confidence in the regularity of Commission decisionmaking in order to place money at risk in exploration and development activities; a lack of consistency or continuity by the Commission could reduce investor confidence to the detriment of our nation's future energy supply. The general public also needs confidence that the Commission is protecting their interests in adequate supplies of energy at reasonable prices. Neither the uncertainty surrounding the status of "holdover" Commissioners, nor the jeopardy to the continuous quorum needed to conduct the Commission's daily business, is likely to inspire such confidence.

Finally, the adoption of five-year, staggered terms for Commission members is consistent with the practice of many other independent agencies in the Federal government, such as the Securities and Exchange Commission. As such, the President would retain as much control over the appointment power at the Commission as he enjoys with respect to other independent agencies. Certainly, the benefits realized in administrative efficiency and continuity will more than justify the enactment of this long-needed legislation, which I support wholeheartedly.

Senator **Bingaman**. Thank you very much.

Our final witness is Ms. Sally Katzen, who is a partner with Wilmer, Cutler & Pickering and Chair of the ABA Section on Administrative Law and Regulatory Practice. We are very pleased to have you here.

STATEMENT OF SALLY KATZEN, CHAIR, SECTION OF ADMINISTRATIVE LAW AND REGULATORY PRACTICE, AMERICAN BAR ASSOCIATION, PARTNER, WILMER, CUTLER & PICKERING

Ms. **Katzen**. Thank you very much. I am delighted to be here. I too will be short. I had a written statement which I would ask to be included in the record.

Senator **Bingaman**. It will be included.

Ms. **Katzen**. I would like to just emphasize a couple of points that came to light as we were considering this subject. The Section of Administrative Law and Regulatory Practice cuts across all the different areas of administrative law, and we were able to bring to bear some expertise and, in what might be termed a quick and dirty research project, but one in which I have some confidence, we found that the Federal Energy Regulatory Commission is the only Federal independent agency whose term for the members is less than the number of members.

There are five members with a four-year term. That is not the way it is done with most other agencies, where you may have five members on a six-year term, or three members on a five-year term.

But the term is normally longer, and I think that has exacerbated the situation, and by extending it to the fifth year you will not only achieve—as is proposed in your bill—you would not only achieve the informed judgment and other attributes that has been discussed today, but I think you will put it more in line with how other independent agencies operate.

I think that the view of the Section members and of the ABA is that by fully staggered terms you do minimize, although not eliminate, the likelihood of substantial turnover, with its very clear detrimental effect on the efficiency and the morale of the agency, both of which are quite important.

There is one aspect of the bill that has raised a question in our minds, however, and I would like to speak to that for just a moment. That is the question of the one-year rollover term or grace period, as it has been referred to today.

Again, a quick and dirty review of the statutes indicates that Congress has used a variety of phrases for this type of situation. Several agencies continue membership until a successor is appointed and qualified, period. The FTC, the ITC, the Federal Maritime Commission, the FDIC are such agencies.

Another formulation is "until the successor is appointed and qualified or expiration of the next session of Congress following the expiration of the term." The FCC, the SEC, the U.S. ITC, and the CFTC are all examples of such agencies.

Another formulation that is sometimes used is "until a successor is appointed and qualified or one year," and that is what FERC had been an example of, and the only other agency is the Consumer Product Safety Commission which uses that particular formulation.

And several statutes are silent, the NLRB and the NRC, the Postal Rate Commission, and a few others which do not specifically provide.

Each of these represents, I think, an attempt to come to grips with avoidance of two extremes. On the one hand, you do not want the draconian death sentence: The term is up and you leave office tomorrow, pack your bags and go. On the other hand, if you continue at the pleasure of the President on a virtually day to day basis until he gets around to nominating somebody or the Senate gets around to confirming that person, you seriously undermine the independence which is a part of, an essential part, of the independent regulatory structure.

And it is for that reason I think that some of the—that the first or second formulation I mentioned are probably to be preferred. The expertise that you have is worthwhile continuing, and if there is a real disaster then Congress has as much a role as the President in the appointments process and can bring to bear its influence.

So I would urge that you retain a form of grace period and would advocate "until a successor is appointed and qualified or until expiration of the next session" as the formulation for your consideration.

Aside from that, I would be happy to answer any questions, and I thank you very much for the opportunity to appear.

[The prepared statement of Ms. Katzen follows:]

AMERICAN BAR ASSOCIATION
GOVERNMENTAL AFFAIRS OFFICE • 1800 M STREET, N.W. • WASHINGTON, D.C. 20036 • (202) 331-2200

Statement of

Sally Katzen, Chair

Section of Administrative Law
and Regulatory Practice

American Bar Association

Before the

Committee on Energy and Natural Resources
United States Senate

In Support of S. 388

April 17, 1989

Mr. Chairman, and Committee Members:

My name is Sally Katzen and I appear here today on behalf of the American Bar Association in support of Senate Bill 388. I have the honor of serving as Chair of the ABA's Section of Administrative Law and Regulatory Practice, with almost 6,000 members, which has as its focus the effectiveness and efficiency of the administrative process. Senate Bill 388, which provides for longer and fully staggered terms for members of the Federal Energy Regulatory Commission, promotes these objectives in a simple and straightforward way, and, with one point of clarification, we support its enactment.

BACKGROUND

Multi-member federal administrative agencies whose members are appointed by the President and confirmed by the Senate typically accommodate change in membership without unduly impairing continuity through a system of staggered, fixed terms for their members. Experience has established that such a system greatly facilitates turnover in membership with a minimal disruptive effect on the agencies. Most of the federal independent multi-member agencies operate pursuant to such a system and generally with success.1/

1/ Indeed, the American Bar Association Bylaws (Article 26) provide for staggered terms for its governing body.

One example of a multi-member agency that does not have a fully staggered system is the Federal Energy Regulatory Commission (FERC). Under current law (42 U.S.C. § 7171 (b)), FERC is to have five members (including the Chairman) appointed by the President with the advice and consent of the Senate. Each member has a four-year term; in this regard, FERC is unusual in that the term of its members is less than the number of members. Two members' terms expire at the end of the second year; the terms of two other members expire at the end of the third year; and the fifth member's term expires at the end of the fourth year. A member whose term has expired may continue to serve until his successor has taken office or for one year, whichever is shorter. As a result of this system, the terms of four Commissioners may expire within a two-year period; indeed, it is theoretically possible that four Commissioners may be replaced in the same year. Given that a quorum of the FERC is three members, the potential exists for the Commission not only to be understaffed for a period but also to have to cease functioning altogether until additional appointments are made. In light of an apparent trend towards a more protracted and arguably more controversial appointment process, expedition in the appointment process cannot be readily assumed.

The potential problem discussed above came dangerously close to occurring in 1988. The terms of two of the sitting members had expired, and they were serving in their "rollover" years, which would expire on October 20. The terms of two other members were also set to expire on October 20, and the fifth member had resigned, effective in August. Hence, the Commission could have been left without a quorum had appointments not been made and confirmed by October 20. The fact that October 20 was on the eve of a Presidential election and the election of a new Congress only exacerbated the situation. To the extent that the major players in the appointment process were preoccupied with the implications of a change of Administration and a new Congress, they might have been distracted from using the political process to appoint those best qualified to serve. This goal of appointing the best-qualified is especially important for an obviously complex and demanding regulatory function that is of increasing significance to the nation's energy future.

Another serious problem with the situation at FERC in 1988 is the adverse effect a turnover of several or, potentially, all the members could have on FERC's effectiveness. In 1988, three of the five appointments were reappointments, but they might not have been. Moreover, even with two new appointments, and hence only three experienced Commissioners in a five-member collegial body, it is much harder to achieve effectiveness, particularly in an era of increasingly complex and demanding situations. In this context, continuity of experience in the governing body, as well as longevity of experience of individual Commissioners, become increasingly critical to effective administration. In short, both continuity and sustained expertise can be seriously undermined under current law.

SENATE BILL 388

Senate Bill 388 would provide greater assurance of achieving both of these important objectives -- continuity and individual experience. After a transition period, the bill would extend the terms of FERC members to five years and fully stagger the terms so that each term would expire in a different year; it would also eliminate the "rollover" year a Commissioner may serve after the expiration of his or her term.[2/] These changes would greatly reduce the probability of the turnover of even two members in a single year, and they would render extremely remote the possibility of facing the situation that occurred in 1988.

Resignations before the expiration of a term of office cannot be controlled or predicted. However, the extended term provided in the bill (from four to five years) and the bill's clear emphasis on stability and an orderly turnover process would send a signal of congressional intent for incumbents to serve full terms. If successful, this might help to retard or reverse what appears to be a disturbing trend towards shorter average terms for members of FERC, as well as economic regulators in general.

[2/] To the extent that the bill eliminates the one-year limit, the change is salutory; it is unclear, however, whether the objectives of the proponents of the bill are served if there is no provision (express or implied) for a sitting Commissioner to remain in office until his or her successor is appointed and qualified.

For these reasons, we believe that Senate Bill 388 should be enacted. It would contribute substantially to enhanced continuity in FERC membership and to increased longevity of service at a time when experience is an increasingly valued asset in the regulatory arena and when increasingly rapid turnover is viewed as a growing problem in a wide variety of regulatory contexts. The experience of other agencies with similarly staggered, fixed terms underscores the wisdom of this amendment to the existing appointments process for FERC Commissioners. In short, the American Bar Association believes that Senate Bill 388 embodies principles that are consistent with sound administrative law and regulatory practice.

Senator **Bingaman**. Well, thank you very much for your testimony.

Let me first ask Representative Light. You are familiar, I am sure, through your Council, the South/West Energy Council, with the actions that are being taken by states to deal with some of these natural gas supply problems and to ensure that there is adequate access to markets that exist and some of the things we talked about here this afternoon that the Assistant Secretary of Energy for Natural Gas might attend to at the national level.

Would you just briefly describe any of those, or what you think can be done or is being done at the state levels in this area?

Mr. **Light**. Senator Bingaman, members of the Committee: The State of New Mexico, in order to alleviate the gas marketing problem in New Mexico—and we did lose our markets. We lost it to the Canadians coming down through the northern part of California.

So a year ago we established in the legislature a fund—this is in the past session—in House Bill 322 $300,000 to study the natural gas markets. We found some rather alarming things that we felt were necessary to look into a little bit further, and in this past session we appropriated in our House Bill 2, our General Appropriations Act, an additional $600,000 to study the gas marketing as it occurs in California as it pertains to the New Mexico markets, primarily designed to look at all marketing of gas from New Mexico.

Now, this is our own state effort. It is almost a million dollars we have put into it. We see in California a marketing—and the Canadian trade treaty, and we see not only a pipeline that may be full of gas today, but I see a new pipeline that could possibly be designed and built, and I do think that is a reality.

So as a result, we need to study what goes on in the California market, because traditionally they have our gas tied up for the lower California market.

Mr. **Raffaniello**. Senator Bingaman, if I could expand on that with just one other example.

Senator **Bingaman**. Yes, go right ahead.

Mr. **Raffaniello**. In the gas market, with the regulation at the state level and then of course with the FERC, there is just a morass of rules and regulations that must be followed in trying to put your producer together with your end user. The Louisiana Office of Conservation, which serves as the regulator for intrastate natural gas sales in Louisiana, set up an office by which they provided not exactly a brokering service, but assisted finding out of state—getting out of state users together with producers in that state and helping them find pipelines and connections that could get the gas from Louisiana to the market.

Something along that line at the Assistant Secretary of Natural Gas might prove helpful on a broader scale in getting the consumers particularly in the Northeast, together with the producers in the Southwest.

Senator **Bingaman**. Mr. Curtis, let me ask you. You had mentioned to me earlier today that you agree with the general idea that some grace period or some period, buffer period between the termination of a five-year term and the actual expiration of authority to act, was appropriate.

I think what we had been discussing there was a continuation of the provision that is presently in the law regarding FERC, which says there is a one-year grace period.

I guess, Ms. Katzen, I understand your testimony to be that you think that the one-year grace period is less favorable, less preferable than the other two options, one of which says you can serve until your successor is named and confirmed, the other being you can serve until the end of the Congress.

You say that those two are preferable to what FERC presently has, is that correct? Let me just ask.

Ms. **Katzen**. Yes, in part because of what Mr. Curtis said, which is it is a definite date of 10/20 and you have somebody else who will be retiring or expiring on that date as well if you continue for one year under the present scheme.

Senator **Bingaman**. I would ask Mr. Curtis if he generally agrees with that? I mean, if we put in such a provision in this legislation to provide some kind of a grace period there, should we go with the existing FERC language? Should we go with one of the two options that has been mentioned?

Mr. **Curtis**. Well, I think Mr. Katzen gave the Committee a good idea of what the contesting values are in the two provisions. What one gains with a one-year limitation is certainty. One is assured of one year if matters are in dispute between the President and the Senate or otherwise cannot be resolved due to recesses or changes in administration.

I just might add a quick note, a quick footnote of history. The provision that governs the SEC appointment terms, which is one of those that provides until the end of the next session of the Congress, emanated from the House Interstate and Foreign Commerce Committee, which was the predecessor to the House Energy and Commerce Committee. I was counsel to the Committee at the time that was written.

The provisions that govern the Consumer Product Safety Commission and Federal Energy Regulatory Commission, which opt for a one-year holdover provision, also came out of those Committees and came out after the SEC formulation was crafted.

So I would suggest to you, for whatever historical note it is worth, that is the more modern of provisions governing appointment of Commissioners' terms, namely if you are going to provide a holdover provision that you do so for one year or such shorter period if a successor is appointed.

Senator **Bingaman**. So by saying that is the more modern, you say that the better judgment of those who drafted it was that the one year made more sense than the one that was applied to the SEC?

Mr. **Curtis**. As I say, for whatever value that has.

Senator **Bingaman**. We appreciate that.

Senator McClure.

Senator **McClure**. Let the record reflect he said it with a smile.

I suppose there is no perfect answer to these questions we are asking about terms or about the holdover periods. I might just note that, if indeed one of the tradeoffs is that getting five-year terms all staggered minimizes the likelihood that there would be two vacancies being filled at the same time, the holdover provision increases the likelihood that two will be made at the same time.

Mr. CURTIS. Yes.

Senator MCCLURE. For whatever value that is to us in trying to determine which of the choices we should make.

I do judge, Mr. Curtis, from your comments that you would think it desirable to separate the reappointment or the end of the term from the election cycle by some period?

Mr. CURTIS. Yes, sir.

Senator MCCLURE. I notice the bill calls for the terms to expire on December 31. I would assume that you might recommend some other date.

Mr. CURTIS. I do not have a solution to you, Senator. I make the same observation and it is a problem, I would suggest, in presidential election years, albeit it is a problem only for one Commissioner, rather than for more than one Commissioner.

Senator MCCLURE. But it might make more sense to make it some time early in the following year, so that an incoming President, not affected by the disabilities of the campaign or the uncertainties of the campaign, would have an unrestricted look at it in the early months of his new term.

Mr. CURTIS. I would certainly agree with that. I think ideally the term should conclude perhaps on the 1st of March or April, as would provide sufficient time for the President to make a nomination and the Senate to exercise its consent, advice and consent with respect thereto. Perhaps April 1st is an appropriate time.

Senator MCCLURE. If this year is any example, they do not even have their Cabinet in place by that time. Well, that is another question.

Mr. Light, I have been looking at the national energy strategy background paper which you submitted. I am grateful for it. I commend you for the work that has been done.

I do not mean to be critical, because I realize the resources of any agency are relatively limited, so I am looking for a point of information, not to make a criticism. Has the group of which you are a member made independent verification of the information that is contained in reports from others?

Mr. LIGHT. I would like to refer that to our Director.

Mr. RAFFANIELLO. Senator, as best we could, we did try to cross-reference and check the information that was provided. We did not have the resources to do independent scientific verification.

But I think if you will look through there, you will see that we had enough balance of input so that nobody was able to sandbag us, as far as we could tell. We had industry, we had academia, and we had think tanks and environmental groups all at the same table.

So if one person was to try to color the story too much, there was someone to bring them to task.

Senator MCCLURE. I understand that and I do not fault you for doing that, because certainly there is an immense amount of work behind almost any of these statistics. And you have used DOE and other governmental sources. You also used outside reference works, all or many—I suppose all of which are identified in your bibliography.

But I did note that on page 18 you have a table with respect to conservation and percentage improvement in end use efficiencies, and I am a little bit worried about the implications of a 90 percent reduction in automobile fuel by the year 2000 as compared to 1973. That is just the first line in that table, and it goes on down.

Now, that is theoretically possible. But practically, many people would say that is not attainable. That does not subtract from the importance that you have given conservation as a part of an energy strategy. I am concerned that it may, just in the publication of the table, stimulate expectations about what is likely to be achieved in energy strategies.

As I look at page 20, footnote number 4 refers to an 80 percent reduction in the electricity consumed by household refrigerators as a result of the standards that were adopted by the Congress last year. Do you really mean an 80 percent reduction?

Mr. LIGHT. That is true, Senator. I would like to comment that there was one source of testimony that we received in our deliberation whereby there could be an equivalent saving through conservation of 6 million barrels a day in our energy, our crude oil consumption. And that is approximately one-third of what we consume today.

So you can see that is a dramatic change by conservation in our use of crude oil.

Senator MCCLURE. Well, I understand that, and I understand that certain people are making those claims. But really what I am asking is, did you verify those claims or take their claims and use them?

Mr. RAFFANIELLO. Sir, on the electricity one as a matter of fact, that came—the refrigerator example actually came from the gentleman with the Natural Resources Defense Council. And a gentleman from the Edison Electric Institute happened to sit there, and I noticed he heard that and he started scribbling, and then he never said anything. And I talked to him later and he said: Well, I figured it out and I think he understated the case.

But I think what we are trying to do here in this background paper is not say this is what we are aiming for. This is the background paper to show, here is what some of the policy options, and if you take it to an extreme you might be able to make these kinds of gains.

But I think as legislators who have developed the strategy, not the background paper, we recognize that the American people are not willing to make the lifestyle changes that would be required in these measures.

Senator MCCLURE. Just as an example, I looked at the refrigerator standards last year and I know what my own refrigerator efficiency rating is. Ain't no way I am going to live long enough to see that kind of reduction, I do not care. And I hope to live beyond the year 2000. I may not make it.

But I get a little disturbed when I see figures like that, that seem to be to be inherent incredible. And I just want the record to indicate that you did not question those figures; you used them. You used them as illustrations of what some of the savings may be as we put together an energy strategy.

I think the same thing is true about almost every other figure we use. There are some people who give it one degree of credibility versus another.

But I think it is a very useful document, and I do not mean to be unduly critical of it, because it does point us the direction that I think is absolutely necessary, and that is that we have an energy policy, an energy strategy, that ignores none of the options, that looks at each of them, that demands that we make rational choices between alternatives based upon the best information that we can get, and that we do not just arbitrarily set aside any one of them.

It may well be I am wrong about energy efficiency standards on refrigerators, and I want people to look at that. I just happened to pick on that one because that was one very recent in my own memory as I looked at my own old refrigerator and my wife was trying to get me to buy a new one.

I said we cannot afford it. If I show her this, she is going to say: Jim, you are wrong; we could not afford not to. And I am going to be saved right into the poorhouse again.

But I do appreciate your testimony, all of you. Thank you very, very much.

And thank you, Mr. Chairman.

Senator **Bingaman**. Thank you, Senator McClure. Thank you for being here for the entire hearing. I think it has been a very great contribution to our deliberations.

Let me thank all the witnesses. And let me say also that the record of this hearing will remain open for two weeks to accommodate any additional comments or answers to written questions that we may receive.

Thank you all very much for coming. We appreciate it.

[Whereupon, at 4:18 p.m., the hearing was adjourned.]

APPENDIXES

APPENDIX I

Responses to Additional Questions

Department of Energy
Washington, DC 20585

May 4, 1989

The Honorable Jeff Bingaman
Chairman
Subcommittee on Mineral Resources
  Development and Production
Committee on Energy and Natural Resources
United States Senate
Washington, D.C. 20505

Dear Mr Chairman:

On April 17, 1989, Under Secretary John C. Tuck appeared before your subcommittee to discuss S. 388, a bill to provide for five-year staggered terms for members of the Federal Energy Regulatory Commission, and S. 389, a bill to amend the Department of Energy Organization Act to establish the position of Assistant Secretary for Natural Gas.

Following that hearing, you submitted written questions for our response to supplement the record. Enclosed are the answers to those questions.

If you have any questions, please have your staff call Rebecca Thompson on 586-4277. She will be happy to assist.

Sincerely,

Rebecca A. Thompson
for Robert G. Rabben
Assistant General Counsel
  for Legislation

Enclosures

cc: The Honorable Chic Hecht
    Ranking Minority Member

POST-HEARING QUESTIONS AND ANSWERS

RELATING TO THE

APRIL 17, 1989, HEARING

BEFORE THE

COMMITTEE ON SENATE ENERGY AND NATURAL RESOURCES

SUBCOMMITTEE ON MINERAL RESOURCES DEVELOPMENT AND PRODUCTION

WITNESS: JOHN C. TUCK

UNDER SECRETARY

U.S. DEPARTMENT OF ENERGY

QUESTION FROM SENATOR BINGAMAN

Question 1: Under section 403 of the DOE Organization Act, (i) the Secretary may propose rules, regulations, and statements of policy with respect to functions within the FERC's jurisdiction under the Natural Gas Act and the Federal Power Act and (ii) the FERC shall take final action on any proposal made by the Secretary in an expeditious manner in accordance with reasonable time limits set by the Secretary.

Does the Department have any plans to utilize this statutory authority in order to implement aspects of national energy policy that pertain to natural gas?

Answer: The Department does not have immediate plans to invoke the Secretary's authority under section 403 of the DOE Organization Act in connection with natural gas. However, Secretary Watkins has expressed his commitment to undertake a comprehensive review of energy policy issues in the development of an integrated national energy strategy. He has also expressed recognition of the important role that natural gas can play in a balanced mix of fuels. It is possible that as the energy strategy development evolves, opportunities for the appropriate exercise of section 403 authority may arise.

Approved:

QUESTIONS FROM SENATOR BINGAMAN

Question 2: Is the statutory authority to initiate FERC rulemaking proceedings something that we in Congress should look at?

For example, should the statute specify dates by which the FERC must take action -- i.e., 30 days within which to publish the rulemaking proposal for comment and 180 days within which to promulgate a final rule or else issue an order on the merits stating the FERC's reasons for not promulgating a rule?

Answer: The Secretary has used the Department of Energy Act section 403 rulemaking authority on a few occasions. I am unaware of any need for Congressional review of this provision. In particular, since the Secretary can set "reasonable time limits" for FERC action (section 403(b)), I see no need to add action-forcing dates to the law.

Prepared by: Jim White Date: 4/25/89 Approved by: ____________

QUESTIONS FROM SENATOR BINGAMAN

Natural Gas Responsibility

QUESTION: Under the Department's current organization and assignment of functions, who is responsible for the functions that S. 389 would assign to the Assistant Secretary for Natural Gas?

ANSWER: Those functions are primarily the responsibility of the Assistant Secretary for Fossil Energy in coordination with other elements of the Department, including the Director of Policy, Planning and Analysis. All of the functions described in S. 389 are currently being performed in the Department under the direction of the Secretary.

QUESTION: In particular, who is responsible for: a) natural gas research and development, b) natural gas import policy under Section 3 of the Natural Gas Act, and c) policy respecting exploration for natural gas and the production, transmission, and use of natural gas.

ANSWER: a) The majority of the natural gas research and development activities in the Department are located in the Office of Fossil Energy. However, some research and development activities pertaining to natural gas utilization are performed in the Office of Conservation and Renewable Energy.

b) The development of gas import policy is performed by the Assistant Secretary for Fossil Energy in coordination with the Assistant Secretary for International Affairs and the Director of Policy, Planning and Analysis, under the overall direction of the Secretary of Energy.

c) The policy functions pertaining to the exploration for natural gas and the production, transmission, and use of natural gas primarily involve the Director of Policy, Planning and Analysis and the Assistant Secretary for Fossil Energy. Other Departmental elements are also involved as appropriate.

QUESTION: What substantive efforts are under way in each of these areas?

ANSWER: Examples of substantive efforts in each of these areas include:

a) Research and Development:

- o Unconventional Gas Recovery Program - Fossil Energy - $11.4 million in FY 1989.
- o High Efficiency Gas Fired Heat Pump Research Program - Conservation and Renewable Energy - $6.2 million in FY 1989.

b) Natural Gas Import Policy: Ongoing Operation of Natural Gas Regulatory Import/Export Program - Fossil Energy - $2.6 million in FY 1989.

c) Natural Gas Exploration, Production, Transmission, and Use Policies:

- Assessment of Costs and Benefits of Flexible and Alternative Fuel Use in U.S. Transportation Sector - Office of Policy, Planning and Analysis - $1.3 million for a two year study.
- Continuing analysis of whether there are unnecessary impediments to natural gas playing a greater role in displacing imports of oil from insecure sources and ameliorating environmental problems - Office of Policy, Planning and Analysis.
- Analysis of natural gas decontrol bills - Office of Policy, Planning and Analysis.
- Analysis of President's oil and gas tax incentive proposal - Office of Policy, Planning and Analysis.

Prepared by: Constance L. Buckley, FE-50, 69482
Date:
Coordinated with:
Reviewed by: for JAW

APPENDIX II

Additional Material Submitted for the Record

STATEMENT

of the

INDEPENDENT FUEL TERMINAL OPERATORS ASSOCIATION
THE NEW ENGLAND FUEL INSTITUTE AND
THE EMPIRE STATE PETROLEUM ASSOCIATION

on

S. 389, TO ESTABLISH AN ASSISTANT SECRETARY
OF THE DEPARTMENT OF ENERGY FOR NATURAL GAS

before the

SUBCOMMITTEE ON MINERAL RESOURCES,
DEVELOPMENT AND PRODUCTION

of the

COMMITTEE ON ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE

Washington, D.C.
April 17, 1989

The Empire State Petroleum Association ("ESPA"), the New England Fuel Institute ("NEFI") and the Independent Fuel Terminal Operators Association ("IFTOA") strongly oppose enactment of S. 389 which would create a new Assistant Secretary for natural gas within the Department of Energy ("DOE"). The creation of such a separate fiefdom for natural gas interests is inappropriate as a matter of national energy policy, runs counter to the essential purposes of the DOE's Organization Act and will result in a promotional advocacy rather than an objective analysis on natural gas matters. The DOE should not become an advocate of particular fuel sources in order to maintain its objectivity and its policy flexibility. Accordingly, if S. 389 is enacted, a comparable bill should be adopted to create Assistant Secretaries for Petroleum and for other fuels within the DOE; the nation has as great a need to develop domestic petroleum resources and maintain a sound oil refining and marketing sector, as it has to develop natural gas resources.

ESPA is the association of independent heating oil and gasoline marketers throughout New York state, including approximately 500 members. NEFI represents more than 1,300 independent home heating oil marketers throughout the six state New England region. IFTOA is an association of 21 independent deepwater petroleum terminals operating from Maine to Florida. IFTOA members supply the East Coast with a large portion of its fuel oil requirements.

I. The Bill Would Segregate Rather Than Integrate Energy Policy.

The DOE was created in 1977 to establish in a single agency an integrated structure all of the energy policymaking activities of the Federal government.1/ The single greatest problem creating the need for the DOE was the dispersal of energy interests among a number of separate bureaus and offices for each of the various fuels. Petroleum activities were regulated by the Federal Energy Administration; natural gas was regulated by the Federal Power Commission; nuclear power was regulated by the Nuclear Regulatory Commission; coal development was controlled by the Department of the Interior; oil pipelines were regulated by the Interstate Commerce Commission. Establishment of DOE ended this separate, compartmentalized approach to energy policy.

The Senate Committee Report recommending the establishment of the DOE stated

> perhaps in no other area of Federal government responsibility has development and implementation of policy been so hampered by

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1/ P.L. 95-91, C.S. 101(5), 102(3).

> organizational problems resulting from fragmentation of responsibilities. Duplication, overlapping jurisdiction, fragmentation of responsibilities, and conflicting mandates have severely hampered the Government's ability to formulate, implement, and enforce a coherent and consistent national energy policy."2/ The Report specifically criticized the separation of policy functions for natural gas and oil, which it stated are "fossil fuels which are almost always found and produced together, [but] are allocated and regulated by the FPC and the FEA respectively.3/

S. 389 would, in part, retreat from that worthy purpose by separating the functions of the DOE relating to natural gas from activities relating to other fossil fuels. It would necessarily create an office that viewed its mission as promotion of a single fuel, rather than preservation of the public interest. Although there would, of course, be a Secretary of Energy who would be the final decisionmaker on major aspects of energy policy, an Assistant Secretary for natural gas could take actions and make major decisions that might be favorable to natural gas interests but could adversely affect other aspects of energy policy.

In addition to its lack of policy rationale, there is no need for this legislation. No proponent has pointed to any deficiency in the current organizational structure or any errors in policy that have resulted from the current structure. An Assistant Secretary for Fossil Energy properly balances the developmental, promotional, economic and regulatory aspects of all fossil fuels.

II. DOE Should Not Promote Natural Gas Consumption

The only reason provided for a change in the organizational structure of DOE is to encourage greater promotion of natural gas. An organizational change for this purpose would be a grave error. First, no office of the DOE should be dedicated to promoting any particular fuel. To do so would render that office a mere government spokesman for the industry involved, rather than the objective and independent policymaker that good

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2/ S. Rep. No. 95-164, 95th Cong. 1st Sess. at 2.

3/ *Id*. at p.3.

government requires. Second, to the extent any promotion of natural gas is appropriate it can be accomplished satisfactorily within the current framework. This structure permits appropriate promotional activities only after consideration of effects on competing fuel sources as well as consumers of competing fuels.

In any event, promotion of one fuel over another is not appropriate national energy policy. We have learned this lesson many times over; there is no need to learn it again. In the 1960's the Atomic Energy Commission promoted a nuclear power future, in which electricity would be "almost too cheap to meter." This, of course, was before plant safety and radioactive waste disposal problems were recognized by government and industry.

In 1974, "Project Independence" promoted electricity, whether generated by coal or nuclear power, as the solution to our reliance on depleting oil and gas resources. By the late 1970's, it became apparent that electricity generation for heat, processes, and transportation was grossly inefficient and, in fact, wasted our depleting oil and gas resources.

By 1978, Congress concluded that natural gas resources were running out most rapidly, and that gas use should be limited to essential uses. The Powerplant and Industrial Fuel Use Act therefore prohibited gas use in future electric power generation and limited its use in industrial broilers. This prohibition on gas use was more severe than any restraints imposed on oil use. In addition, the Fuel Use Act manifested the government's then preference for coal as the appropriate fuel for electric power generation and large industrial broilers.

The energy pendulum has swung a long way since 1978. The prohibitions on gas use in the Fuel Use Act have now been repealed, because Congress recognized that such bans are inflexible, economically inefficient and quickly obsolete. For that same reason, Congress should not institutionalize a preference for any specific fuel, even if current conditions suggest that a preference is appropriate. Balance and flexibility must be maintained, because we have learned that energy conditions change rapidly and that surpluses can quickly turn into shortages.

In addition, promotion of natural gas is not sound energy policy. The energy policy of the last eight years has been to rely, to the greatest extent practicable, on market forces for determining fuel choses. This policy has been extremely successful; the economic forces applied in the 1980's managed our energy economy far better than the government regulatory forces in the 1970's. Government promotion of one fuel may seem somewhat different from the traditional energy regulatory activities that were dominant in the 1970's, but it is merely the other side of the same coin. Promotion of a single fuel places government, rather than the private sector, in the position of dictating fuel choses. Whether implemented by prohibition or incentive, this is another form of energy allocation. It will bring with it unwanted affects, just as have all previous government policies embodying fuel preferences.

III. Conclusion

Congress has learned that the energy pendulum swings quickly and widely. For that reason, it is essential that flexibility be maintained in energy decisionmaking. S. 389 would restrict that flexibility and impair the effectiveness of the DOE. Natural gas should be permitted to compete fully and fairly without regulatory restrictions. However, it should not be provided a governmental cheerleader whose job would be to develop gas programs without full consideration of their balance and effects on other fuel producers, supplies and consumers.

If the organization of the DOE is to be restructured along functional lines, then assistant secretaries should be created for petroleum as well as for coal and perhaps other fuels. These fuels also should have a bureau within the DOE that represents their interests before the Secretary and to the public at large. As independent petroleum marketers we do not endorse this approach; however, this is the only reasonable and balanced approached to take if Congress decides to create an Assistant Secretary for natural gas.

PMAA

PETROLEUM MARKETERS ASSOCIATION OF AMERICA
1120 VERMONT AVE. NW • SUITE [illegible] • WASHINGTON, DC 20005 • (202) 331-1198

April 17, 1989

The Honorable J. Bennett Johnston, Chairman
Committee on Energy and Natural Resources
United States Senate
Washington, D.C. 20510-5150

Reference: Hearing on S. 389, A bill to create an Assistant Secretary for Natural Gas

Dear Mr. Chairman:

On behalf of the Petroleum Marketers Association of America (PMAA), I wish to express my deep concern with S. 389, a bill to establish the position of Assistant Secretary for Natural Gas within the Department of Energy (DOE). PMAA would recommend the bill not be enacted. We would also request that this letter be included in the hearing record for the April 17th, 1989 hearing on this issue.

The PMAA is a federation of 43 state and regional associations representing nearly 11,000 small, independent petroleum marketing companies nationwide. These marketers collectively sell 75 percent of the residential home heating oil, over half the gasoline and 60 percent of the diesel fuel consumed in the United States annually.

Our specific concerns relate to the United States' recent energy history as well as to its future development. Over the past 20 years, primarily as a result of the Arab embargo, America has been searching for a solution to our nation's energy problem. In the early 1970's it was the Nixon Administration that pushed the all-electric economy. Then in the late 1970's coal and nuclear received great emphasis along with various synthetic fuels programs. Use of oil and natural gas were to be discouraged to the maximum extent possible.

The 1980's brought about a recognition that perhaps such restrictions were unwarranted and, as part of the Fuel Use Act of 1987, such restrictions were repealed.

Most recently natural gas has been touted as the panacea to many of our nation's energy and environmental ills. Optimistic projections about the United States' natural gas resource base lend credibility to the effort as do the promotional and marketing efforts of the natural gas industry.

PMAA, representing marketers of fuel oil and gasoline, does not share in this natural gas fervor and urges the Committee to be alert to the lesson of history. That lesson quite simply is that America is able to maintain its energy security so long as its energy policy is based on a balanced reliance on several fuel sources including oil, gas, coal, solar, nuclear, etc. Over dependence on any single source makes the United States vulnerable to any number of problems which may result from over use of that particular fuel.

For example, there seems to be a common perception that natural gas supplies are endless. One recent article in the Wall Street Journal said, "...the nation has centuries worth of natural gas." The fact is, however, that while perceptions of gas availability have grown, gas reserves have been on a downward path for two decades.

According to the Department of Energy (DOE), proved reserves of natural gas in 1987 were 163 trillion cubic feet (tcf); at 1987 consumption levels, this would provide gas for 9.6 years. Similarly, crude oil reserves, at 27 billion barrels, would satisfy domestic consumption for 4.5 years. Because reserve estimates are based on economic feasibility as well as physical availability, these estimates may well move up or down with energy prices. The fact remains, however, that proved gas reserves have declined more or less steadily for 20 years, with the 1987 level 36 percent below the 1967 peak.

The same low prices that have depressed drilling, and hence reserve additions, have also boosted consumption levels. According to the DOE, gas consumption in 1988 was up nearly 10 percent over the 1986 level, twice the rate of increase in oil consumption during the same period. Demand is fast approaching the limits of current supply capabilities. Furthermore, in the absence of a sudden surge in drilling, most analysts do not believe that the industry can achieve a significant increase in production beyond current levels.

Data Resources, Inc. (DRI), for example, has predicted a period of "unsteady equilibrium" for gas markets in the 1990's, and projects that the much-touted gas surplus will dissipate by as early as next year. Because domestic supplies will be found and developed more slowly than consumption will increase, greater volumes of gas imports will be required. In fact, John Sawhill, a former energy official in the Nixon, Ford and Carter Administrations has projected a natural gas shortage as early as next winter.

DRI projects that imports will nearly treble by 2010. And while it is true that our allies, Canada and Mexico, have the potential to be important sources of gas imports, supplies from these countries will also ultimately have limits. In the longer run, increased gas imports will originate in countries with the largest supplies and lowest production costs, primarily the Middle East. And while it is true that there is not yet a cartel among gas suppliers, there is a concentration of supplies; fully 70 percent of world gas reserves are located in the Middle East and Centrally Planned Economies.

For natural gas to be truly effective from both an energy and environmental perspective, it would be necessary for natural gas to make significant inroads in the transportation sector since this sector currently depends almost exclusively on petroleum.

Yet transportation demand is so large, accounting f[illegible] nearly 30 percent of total energy consumed, that domestic gas supplies could not begin to replace oil to any meaningful extent. According to the Department of Energy (DOE), 25 percent of U.S. natural gas production would be needed to replace 20 percent of U.S. energy demand in the transportation sector. In addition, before any quantity of oil can be replaced by gas in the transportation sector, not only must gas supplies increase dramatically, but also massive capital investment will be required.

In sum, natural gas is, like oil, a finite domestic resource. In fact, the two fuels face a set of market constraints that are not only similar but are also inextricably linked. Low oil prices depress gas prices; low prices discourage drilling and encourage consumption; reserves are depleted; imports increase.

While we understand the desire of the sponsors of the legislation to coordinate all departmental natural gas policy, including research and development funding technologies, we believe natural gas should compete with other fuels within the existing departmental structure. There is no assistant secretary for oil. There is no assistant secretary for coal. Yet these fuels will be critical in meeting our long term energy needs and should not be relegated to second class status within the Department's priorities.

Even under the current DOE structure, many fuel oil dealers believe they already have been relegated to such second class status when compared to natural gas. For example, PMAA has been concerned for several years over the unwillingness of Congress to adequately fund research and development to improve technology related to oil heated homes. Brookhaven National Laboratory has been engaged in oil heat research and development for over 12 years.

With an R&D investment of less than $10 million, Brookhaven has demonstrated, among other things, the success of the flame retention burner that has become the industry standard for new oil heating equipment. New flame retention equipment and retrofit devices for existing oil burning equipment are estimated to save consumers over 10 billion dollars through reduced oil usage by the end of the next decade. Additional improvements that have resulted from development or demonstration activities at Brookhaven include typical energy savings of 9 to 10 percent for vent dampers and flue heat recovery systems used with hydronic oil boilers. Cumulative energy savings for improvements to high efficiency burners and boilers are expected to exceed another 7 billion dollars by the year 2000. In addition to providing substantial savings to consumers, a focused oil heat R&D program can make a significant contribution to reducing oil imports.

Despite these advances in oil heat technology, there is still much that can be done. According to a Batelle Pacific Study, the estimated full savings for a number of other feasible technologies could bring about fuel savings ranging from 5 percent to 32 percent. To accomplish these objectives, PMAA has recommended an FY 1990 funding level for oil heat R&D of $3.9 million.

While this is a drop in the bucket relative to what is now being spent on natural gas R&D, it is more than 5 times the level of spending approved for these programs as part of the FY 1989 budget. Yet fuel oil marketers, as small business persons, must compete in a retail marketplace with the giant, natural gas utility monopoly which benefits from substantial R&D funding.

In summary, PMAA believes natural gas is fairing extremely well within the current structure of the DOE. We see no need for the creation of a new Assistant Secretary for Natural Gas which, in all likelihood will serve as an advocate and spokesman for the natural gas industry. We repeat, America's energy security is best served by relying on a diverse and balanced fuel mix. The federal government's role should be to promote conservation and improved environmental technologies for all fuels, not just natural gas.

Thank you for the opportunity to state these views and we will be happy to respond to any questions the Committee may have.

Sincerely,

Phillip R. Chisholm

Phillip R. Chisholm
Executive Vice President

PRC:cp

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PAUL RODGERS
Administrative Director
General Counsel

GAILE ARGIRO
Treasurer

April 17, 1989

Honorable J. Bennett Johnston
Chairman
Committee on Energy and Natural Resources
364 Dirksen Senate Office Building
Washington, D.C. 20510

Re: Statement on legislation proposing an Assistant Secretary for Natural Gas at DOE

Dear Chairman Johnston:

On behalf of the National Association of Regulatory Utility Commissioners, I respectfully request that this statement be included in the record of today's Committee hearing on S. 389, proposing to create and Assistant Secretary for Natural Gas within the Department of Energy.

The NARUC, which represents the State commissions responsible for regulating retail sales of natural gas, supports S. 389, as is indicated by the enclosed policy resolution recently adopted by our Executive Committee.

It is the sense of the Association that natural gas concerns have not been adequately represented within DOE. Expanded use of natural gas has the potential to ameliorate some of the environmental problems associated with other fuels. For this and other reasons, it merits more attention from the Federal government.

Sincerely,

Caroline M. Chambers
Director, Congressional Relations

Enclosure

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Linda G. Bisson, New Hampshire

*Member of the Executive Committee of the Association

Resolution on the Designation of an Assistant Secretary for Natural Gas in the Department of Energy

WHEREAS, There is a broad consensus among political leaders, environmentalists, energy analysts and others that there should be expanded use of the nation's natural gas resource base; and

WHEREAS, Such expanded use would help meet the nation's environmental, national security and balance of trade goals; and

WHEREAS, The natural gas industry has not been adequately represented under the current organizational structure of the United States Department of Energy (DOE); and

WHEREAS, The expanded use of natural gas in the nation's energy mix will necessitate reorganization of the DOE to facilitate a wide range of needed actions; and

WHEREAS, An Assistant Secretary for Natural Gas would be a strong advocate within DOE and the Administration on needed gas industry initiatives and could focus on the various ways in which the role of natural gas can be enhanced and coordinate natural gas matters within the Federal government; and

WHEREAS, An Assistant Secretary for Natural Gas could provide regulators and the gas industry with a DOE representative for considering and advancing programs needed to accelerate energy research and development functions and applications for the use of natural gas in areas of national benefit and interest; now, therefore, be it

RESOLVED, That the Executive Committee of the National Association of Regulatory Utility Commissioners, assembled at its 1989 Winter Meeting in Washington, D.C., strongly supports having an Assistant Secretary for Natural Gas in the Department of Energy, whose responsibilities would be directed exclusively to natural gas; and be it further

RESOLVED, That the Executive Committee of the NARUC urges the Secretary of Energy, in the exercise of his statutory discretion, to organize the responsibilities of the eight Assistant Secretaries, to designate one Assistant Secretary exclusively for natural gas and urges the President to issue an Executive Order to direct Federal departments and agencies to consult with the Assistant Secretary for Natural Gas on actions that may impact natural gas policy or, in the alternative, urges the President to support legislation creating such a position.

Sponsored by the Committee on Gas
Adopted March 1, 1989

South West
Energy Council

A NATIONAL ENERGY STRATEGY

ALABAMA

■

ALASKA

■

ARKANSAS

■

COLORADO

■

LOUISIANA

■

NEW MEXICO

■

OKLAHOMA

■

TEXAS

■

The South/West Energy Council believes that the President and Congress should aggressively implement a national energy strategy. Energy is the key to assuring a viable economy, a strong national defense and sustaining the American way of life. This Strategy is strongly recommended as a starting point for federal efforts.

The South/West Energy Council was formed in 1975 by elected leaders of key energy producing states to encourage the development of the nation's indigenous energy resources while maintaining the integrity of our natural environment.

Funded by state appropriations, the Energy Council provides its member states a forum for addressing state and federal policies toward energy development and environmental protection. Its activities range from fact-finding meetings and policy workshops to representation before the Congress and federal agencies.

Delegates to the Energy Council are appointed by the legislative leadership from the House and Senate in each member state, and are served by professional staff from offices in Irving, Texas.

■

A NATIONAL ENERGY STRATEGY

Goal

It shall be the goal of the United States' energy strategy to provide a stable supply of reasonably-priced energy in an efficient and environmentally-sound manner to meet the needs of its citizens, economy, and national security interests. Energy independence shall be the long term goal of the United States.

Conservation

It shall be the energy strategy of the United States to promote energy conservation, improving efficiency, in a variety of ways by setting or strengthening: Corporate Average Fuel Efficiency Standards for automobiles; energy efficiency provisions in building codes (including lighting efficiency standards); home appliance and heating and cooling unit efficiency standards; and waste recycling or reduction standards for industrial manufacturing.

Also, the federal government shall promote energy conservation education and fund research into conservation technologies. Basic energy conservation research funded by the government shall include superconductivity studies.

Crude Oil

It shall be the strategy of the United States to promote the environmentally-sound production of domestic energy resources, the conservation and efficient use of energy resources, and the management of energy imports.

It shall be the policy of the United States to promote and encourage domestic production of crude oil in an environmentally-sound manner in order to supply United States consumers with a secure source of petroleum, and provide a stabilizing influence to the world price of crude oil. In this regard the federal government shall provide tax and tax accounting incentives to oil producers for domestic exploration and development efforts with specific investment tax credits for research and development and enhanced oil and gas recovery.

It shall be the policy of the United States to assure that energy resources are utilized in a manner that recovers the most energy value possible. Similarly, it is the strategy of the United States to alleviate oil dependency by funding research and development to perfect alternative fuels, particularly for the transportation sector and primary modes of personal transportation. Enhanced oil and gas recovery from known reserves shall be promoted, and a research, development, demonstration, and commercialization program for unconventional sources of crude oil shall be pursued through a cooperative effort among industry, higher education, and national laboratories.

It shall be the policy of the federal government to manage United States imports by diversifying import suppliers, allowing the exportation of Alaskan crude oil, pursuing a Pan American Energy Alliance with Western Hemisphere producing nations, resolving technological barriers to the use of vast reserves of unconventional crude oil in the Western Hemisphere, and opening a dialogue with suppliers worldwide. It shall also be the policy of the United States to continue filling the Strategic Petroleum Reserve, at least to its present goal of 750 million barrels.

It shall be the strategy of the United States to support active management of federal lands and Outer Continental Shelf areas in accordance with principles of multiple use and to recognize the potential that public lands hold, particularly in Alaska, for environmentally-sound development of energy resources.

Coal

Coal is America's leading fuel in terms of reserves. It holds the promise of long-term energy security for this nation. However, its current use is constrained by aged technology and environmental concerns.

The Clean Coal Technology Program addresses both these constraints and offers additional benefits as well. The Program commits 5 billion dollars, half federal government funding and the half private sector monies, to demonstrate improved technology.

These projects not only burn coal in an environmentally-safe manner, but more efficiently as well. Many environmental concerns can be satisfied through the aggressive development and implementation of clean coal technologies which will allow the use of all types of coal reserves economically and cleanly without environmentally significant by-products or waste materials.

The Program will make the United States a technological leader, with the ability to export not only coal but clean, efficient coal technology to other nations of the world. The program also fulfills this nation's promise to its neighbor, Canada, to forcefully address transboundary environmental problems.

It shall be the strategy of the United States that the Clean Coal Technology Program be continued for its environmental, conservation, and export potential.

Natural Gas

It shall be part of the strategy of the United States to promote the use of clean, efficient natural gas in residential, commercial, industrial, utility, and transportation applications. Such use shall include the co-firing of natural gas with other fuels for efficiency or environmental purposes.

The United States shall promote and encourage domestic production of natural gas in an environmentally-sound manner by providing tax and tax accounting incentives to producers of natural gas. Further, the federal government shall complete price deregulation as existing contracts expire.

The Federal Energy Regulatory Commission shall expedite approval of pipeline construction serving new markets, particularly the oil-dependent residential market of the Northeast, and shall assure that all such projects provide access by interconnecting pipelines to producing areas of this nation.

The federal government shall fund continuing research and development relative to the environmentally-sound production and use of natural gas, in order to conserve energy by improving efficiency and shall promote development of methanol and natural gas-fueled vehicles.

Renewable Energy

Renewable energy sources are characterized by a broad range of technologies, costs, efficiencies, and environmental concerns. Recognizing this spectrum of resources, it shall be the strategy of the United States to institute a long range, stable Renewable Energy Development Program which identifies and assists renewable energy sources from research and development through demonstration projects and commercialization in a cooperative effort among industry, higher education, and national laboratories.

Renewable energy resource development must be ranked and funded on the basis of factors including energy efficiency, economic competitiveness, environmental impacts, and technological adaptability. Part of this program, and critical to its success, is federal development of alternative technologies that improve renewable energy efficiencies, cut costs, and assist in integrating renewable energy into existing energy systems. Also needed is a translation and distribution system for international technical and marketing papers on renewable energy.

Electricity

It shall be the strategy of the United States to promote the development of sources of electric energy that are sufficient to meet national needs, secure from external threat, reliable in availability and delivery, safe relative to people and the environment, and efficient for use in homes, businesses and industries.

The electricity sector today is marked by tremendous regional diversity, especially with regard to capacity. Fuel usage also varies widely. Implementation of federal legislation that fails to recognize this diversity inevitably penalizes one region or another.

State regulatory bodies are close to consumers, utilities, industries, and concerned for state economic well-being. State regulatory bodies are in the best position to evaluate consumer needs, questions relative to fuel choice, economic development implications, and system reliability.

A federal government program for storage and disposal of spent nuclear fuel shall be finalized as quickly as is safely possible. Federally-acceptable, standardized nuclear powerplant designs must also be established.

Electricity research and development efforts shall be intensified with regard to energy efficiency, superconductivity, advanced and reasonable environmental controls in power generation, and development of cost-effective renewable supply technologies. The development of electric vehicles shall also be pursued.

Implementation

The development of environmentally-sound energy conservation, supply and distribution systems requires long range planning and sustained efforts. The immediate establishment and implementation of a national energy strategy, as recommended in this document and discussed in the related Background Paper, will assure that the future energy needs of American citizens, the United States economy and national security interests are met in an efficient and environmentally-sound manner.

South West
Energy Council

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A NATIONAL ENERGY STRATEGY AND BACKGROUND PAPER

The South/West Energy Council and the South/West Energy Research Foundation believes that the President and Congress should aggressively implement a national energy strategy. Energy is the key to assuring a viable economy, a strong national defense and sustaining the American way of life. This Strategy is strongly recommended as a starting point for federal efforts.

SOUTH/WEST ENERGY COUNCIL
AND
SOUTH/WEST ENERGY RESEARCH FOUNDATION

SOUTH/WEST ENERGY COUNCIL
AND
THE SOUTH/WEST ENERGY RESEARCH FOUNDATION

NATIONAL ENERGY STRATEGY PROJECT

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A NATIONAL ENERGY STRATEGY

Goal

It shall be the goal of the United States' energy strategy to provide a stable supply of reasonably-priced energy in an efficient and environmentally-sound manner to meet the needs of its citizens, economy and national security interests. Energy independence shall be the long term goal of the United States.

Conservation

It shall be the energy strategy of the United States to promote energy conservation, improving efficiency, in a variety of ways by setting or strengthening: Corporate Average Fuel Efficiency Standards for automobiles; energy efficiency provisions in building codes (including lighting efficiency standards); home appliance, heating and cooling unit efficiency standards; and waste recycling or reduction standards for industrial manufacturing.

Also, the federal government shall promote energy conservation education and fund research into conservation technologies. Basic energy conservation research funded by the government shall include superconductivity studies.

Crude Oil

It shall be the strategy of the United States to promote the environmentally-sound production of domestic energy resources, the conservation and efficient use of energy resources, and the management of energy imports.

It shall be the policy of the United States to promote and encourage domestic production of crude oil in an environmentally-sound manner in order to supply U.S. consumers with a secure source of petroleum, and provide a stabilizing influence to the world price of crude oil. In this regard the federal government shall provide tax and tax accounting incentives to oil producers for domestic exploration and development efforts with specific investment tax credits for research and development and enhanced oil and gas recovery.

It shall be the policy of the United States to assure that energy resources are utilized in a manner that recovers the most energy value possible. Similarly, it is the strategy of the United States to alleviate oil dependency by funding research and development to perfect alternative fuels, particularly for the transportation sector and primary modes of personal transportation. Enhanced oil and gas recovery from known reserves shall be promoted, and a research, development, demonstration and commercialization program for unconventional sources of crude oil shall be pursued through a cooperative effort among industry, higher education and national laboratories.

It shall be the policy of the federal government to manage U. S. imports by diversifying import suppliers, allowing the exportation of Alaskan crude oil, pursuing a Pan American Energy Alliance with Western Hemisphere producing nations, considering technological barriers to the use of vast reserves of unconventional crude oil in the Western Hemisphere and opening a dialogue with suppliers worldwide. It shall also be the policy of the United States to continue filling the Strategic Petroleum Reserve, at least to its present goal of 750 million barrels.

It shall be the strategy of the United States to support active management of federal lands and Outer Continental Shelf areas in accordance with principles of multiple use and to recognize the potential that public lands hold, particularly in Alaska, for environmentally-sound development of energy resources.

Coal

Coal is America's leading fuel in terms of reserves. It holds the promise of long-term energy security for this nation. However, its current use is constrained by aged technology and environmental concerns.

The Clean Coal Technology Program addresses both these constraints and offers additional benefits as well. The Program commits 5 billion dollars, half federal government funding and half private sector monies, to demonstrate improved technology.

These projects not only burn coal in an environmentally-safe manner, but more efficiently as well. Many environmental concerns can be satisfied through the aggressive development and implementation of clean coal technologies which will allow the use of all types of coal reserves economically and cleanly without environmentally significant by-products or waste materials.

The Program will make the U.S. a technological leader, with the ability to export not only coal but clean, efficient coal technology to other nations of the world. The program also fulfills this nation's promise to its neighbor, Canada, to forcefully address transboundary environmental problems.

It shall be the strategy of the United States that the Clean Coal Technology Program be continued for its environmental, conservation and export potential.

Natural Gas

It shall be part of the strategy of the United States to promote the use of clean, efficient natural gas in residential, commercial, industrial, utility and transportation applications. Such use shall include the co-firing of natural gas with other fuels for efficiency or environmental purposes.

The United States shall promote and encourage domestic production of natural gas in an environmentally-sound manner by providing tax and tax accounting incentives to producers of natural gas. Further, the federal government shall complete price deregulation as existing contracts expire.

The Federal Energy Regulatory Commission shall expedite approval of pipeline construction serving new markets, particularly the oil-dependent residential market of the Northeast, and shall assure that all such projects provide access by interconnecting pipelines to producing areas of this nation.

The federal government shall fund continuing research and development relative to the environmentally-sound production and use of natural gas, in order to conserve energy by improving efficiency and shall promote development of methanol and natural gas-fueled vehicles.

Renewable Energy

Renewable energy sources are characterized by a broad range of technologies, costs, efficiencies and environmental concerns. Recognizing this spectrum of resources, it shall be the strategy of the U. S. to institute a long range, stable Renewable Energy Development Program which identifies and assists renewable energy sources from research and development through demonstration projects and commercialization in a cooperative effort among industry, higher education and national laboratories.

Renewable energy resource development must be ranked and funded on the basis of factors including energy efficiency, economic competitiveness, environmental impacts and technological adaptability. Part of this program, and critical to its success, is federal development of alternative technologies that improve renewable energy efficiencies, cut costs and assist in integrating renewable energy into existing energy systems. Also needed is a translation and distribution system for international technical and marketing papers on renewable energy.

Electricity

It shall be the strategy of the United States to promote the development of sources of electric energy that are sufficient to meet national needs, secure from external threat, reliable in availability and delivery, safe relative to people and the environment and efficient for use in homes, businesses and industries.

The electricity sector today is marked by tremendous regional diversity, especially with regard to capacity. Fuel usage also varies widely. Implementation of federal legislation that fails to recognize this diversity inevitably penalizes one region or another.

State regulatory bodies are close to consumers, utilities, industries, and concerned for state economic well-being. State regulatory bodies are in the best position to evaluate consumer needs, questions relative to fuel choice, economic development implications, and system reliability.

A federal government program for storage and disposal of spent nuclear fuel shall be finalized as quickly as is safely possible. Federally-acceptable, standardized nuclear powerplant designs must also be established.

Electricity research and development efforts shall be intensified with regard to energy efficiency, superconductivity, advanced and reasonable environmental controls in power generation, and development of cost-effective renewable supply technologies. The development of electric vehicles shall also be pursued.

Implementation

The development of environmentally-sound energy conservation, supply and distribution systems requires long range planning and sustained efforts. The immediate establishment and implementation of a national energy strategy, as recommended in this document and discussed in the related Background Paper, will assure that the future energy needs of American citizens, the U.S. economy and national security interests are met in an efficient and environmentally-sound manner.

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INTRODUCTION

In 1988, because of the vital relationship between energy, the economy and the long term security of this nation, the South/West Energy Council (the Council) and the South/West Energy Research Foundation (the Foundation) undertook a project to provide a national energy strategy. As proposed, the National Energy Strategy presents a series of recommendations relative to conservation, crude oil, coal, natural gas, renewable energy and electricity.

The South/West Energy Council consists of legislators from the states of Alabama, Alaska, Arkansas, Colorado, Louisiana, New Mexico, Oklahoma and Texas. The National Energy Strategy has been unanimously adopted by the South/West Energy Council for transmittal to President-elect George Bush and the One Hundred and First Congress of the United States.

In preparing the National Energy Strategy, the Council and its research affiliate, the Foundation, held a series of workshops, drawing on distinguished experts. This Background Paper was commissioned to provide a research overview and consolidate points raised at the workshops. It attempts to identify current energy-related issues while providing the basis for long term policy. As such, the Background Paper is a tool and some members of the Council or the Foundation may not agree with specific parts of it.

Overall, the South/West Energy Council has found that the nation's commitment to energy conservation, which led to substantial gains in efficiency over the last decade, needs to be renewed, and domestic production of crude oil promoted. Simultaneously, crude oil imports should be managed by a variety of means including a Pan American Energy Alliance, import diversification and the opening of a dialogue with major suppliers to the U.S.

The Clean Coal Technology Program is supported in order to provide advanced technology, improving the environment acceptability and efficiency of coal-powered generation. A stable, long term Renewable Energy Development Program will address the broad range of renewable energy sources awaiting research, development, demonstration or commercialization. Continued emphasis on state regulation of electric power, keeping considerations of electric system reliability and efficiency close to the consumer, is recommended. Finally, immediate action to clearly articulate and implement a national energy strategy is required.

The concern that calls today for a national energy strategy, or a national energy management plan, is not a crisis such as the elimination of a major source of supply. It is less tangible than a military disruption of a crude oil flow line, but more threatening. It is the future stability of our national economy.

Over the last 15 years, the U. S. has seen three major changes in the price of oil, two significant increases and a decrease from which a solid price has not yet clearly emerged. These price fluctuations have been followed by two national recessions and a depression in producing regions of the country.

Forty-three percent of the energy consumed in this country is petroleum. The U. S. economy is subject to control of an essential commodity, which in turn is subject to the control of foreign interests. Energy dependency and the economic dislocation threat it portends does not require that the U. S. take over foreign interests but neither does it recommend that the threat be ignored, in hopes of beating the odds on an economic disruption.

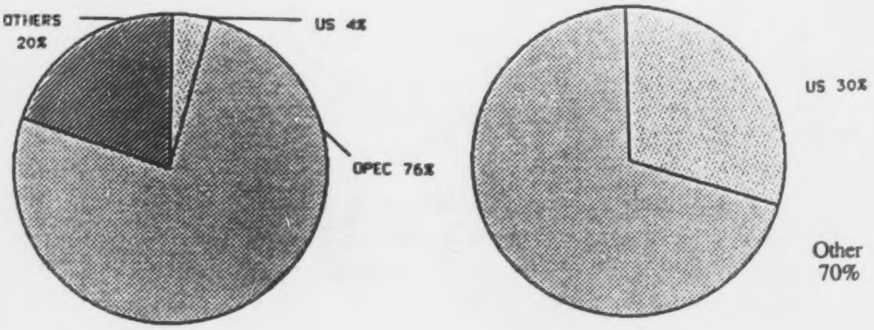
It requires a management plan that maximizes American resources, recovering domestic resources and recovering energy value from those resources, while managing necessary imports to the country's best advantage. This plan must move the U.S. toward eventual energy independence.

The U.S. position is a relatively simple matter of supply and demand. This country has four percent of the free world's oil reserves; the Organization of Petroleum Exporting Countries (OPEC) has fully three-quarters.

On the other hand, as Figure 1 indicates, the U.S. accounts for 30 percent of the free world's consumption of oil. Given the nation's current energy supply mix and consumption habits, the U. S. has long passed any hope of energy self-sufficiency through crude oil production. In a little more than a year (at the end of 1990), imports are expected to account for half of the nation's consumption of crude oil.

FIGURE 1

1986 FREE WORLD OIL RESERVES AND CONSUMPTION



RESERVES

CONSUMPTION

Source: South/West Energy Council

While oil is not the only indigenous energy source, its role in the national consumption pattern is a dominant one. As Table 1 indicates, petroleum products account for well over forty percent of the energy consumed in the U.S. Importantly, particularly with regard to the transportation sector, there are virtually no technically-feasible alternate fuels currently available for use as substitutes for petroleum. Consequently, a national energy policy must first and foremost deal with crude oil.

TABLE 1

1987 U.S. ENERGY CONSUMPTION

	Quadrillion Btu	Percent
Petroleum Products	32.63	41
Coal	18.00	23
Natural Gas	17.18	22
Nuclear	4.92	6
Hydropower	3.04	4
Other	2.85	4
Total	78.62	100

Source: DOE-EIA, South/West Energy Council

In terms of crafting an energy policy, the last two decades has provided a wealth of experience upon which to draw. Some of it has been unfortunate, like the last national policy which in 1985, declared the U. S. to be in good energy health immediately prior to the world price collapse that halved domestic exploration.

Some of the experience has been extremely hopeful, like the conservation strides of the 1970s that have allowed the national economy to grow by 2.5 percent a year while consumption of oil has remained at its 1973 level; or the production of this country's greatest oil field at Prudhoe Bay. Despite this experience, crude oil dependency and dogmatically exclusive proposals for energy security still face policy makers.

The dependency is clear. Examine for example, the transportation sector. The U.S. is 97 percent dependent on oil for transportation. Without oil, this nation does not move.

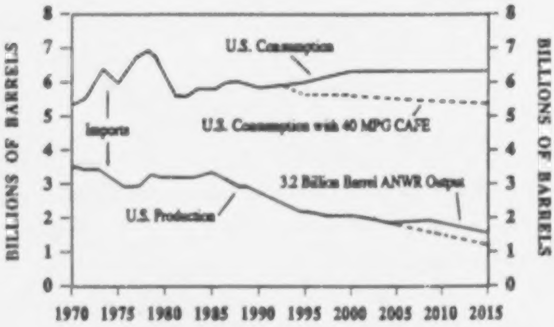
Exclusive policy proposals are perhaps best characterized by the most recent federal approach -- let the market take care of the problem. With 76 percent of the free world's supply of oil belonging to OPEC nations, it is clear that the world oil market is not guided by an invisible hand but rather by some very real foreign governments.

Battles rage nationally over domestic production policies. A policy that would rely solely on domestic reserves simply can't live up to its promise. A policy that vilifies oil companies for "draining America first" may in fact lead to draining America of needed capital, as even now the U. S. sends four billion dollars a month abroad for foreign oil.

In fact, Figure 2 demonstrates the need to add to domestic production as national consumption levels are decreased. Clearly, despite conservation and domestic production efforts, imports will continue to be a critical component of America's energy mix over the short to medium term.

FIGURE 2

PRODUCTION, CONSERVATION AND IMPORTS SCENARIO



CAFE refers to corporate automobile fleet efficiency (federal mileage standards) and ANWR refers to potential production from oil and gas development of the Arctic National Wildlife Refuge.

Source: Yeager, p. 20.

Over the last decade, a degree of comfort has been afforded the U.S. as significant non-OPEC sources of oil were brought on line. Diversifying the sources of supply of imports is one way to manage the import situation. However, many of these producing nations are in supply positions similar to that of the U.S.; Canada has a smaller crude oil reserve base than does the U.S. and reserves in the United Kingdom are being fast depleted, just as are American reserves.

This is not to say that non-Middle Eastern sources of oil will not be available. In the Western Hemisphere, Mexico holds promise for the long term (in this case 12 years or more is long term) and new discoveries are being made, e.g. Brazil's largely unquantified strikes. The largest reserves, conventional and nonconventional, in this hemisphere are in Venezuela which, although a member of OPEC, supplied the U.S. during embargoes in the 1970s.

But the bulk of the world's conventional reserves rest in the Middle Eastern OPEC nations. If indeed this part of the world will be such important suppliers, then the U. S. should start a dialogue to find the common ground that no doubt exists between the world's largest consumer and its largest suppliers.

However much experience past energy policies have granted the nation, it has not been matched by security. In-fact, as a nation the U. S. is in an unenviable position of having almost all of its indicators pointing away from a secure energy and economic position. The only bright spot is the Strategic Petroleum Reserve (SPR) which has become this nation's primary energy insurance policy. Consider the factors addressed in Table 2.

The goal of the nation's energy policy is clear; to provide a stable supply of reasonably-priced energy in an efficient and environmentally sound manner to meet the needs of its citizens, economy and national security interests. Energy independence should be the long term goal of the United States.

Over the short term the nation's energy management plan must provide for economic growth while testing the flexibility of supply and demand constraints; that is, how to maximize recovery of both domestic resources and energy from those resources through improved efficiency and conservation measures. Equally important, how can the U. S. best manage its oil imports as an essential component of the national energy mix.

TABLE 2

INDICATORS AND TRENDS RELATED TO ENERGY AND ECONOMIC SECURITY

U. S. Energy Consumption	↑	Consumption is once again increasing, after leveling off as a result of conservation efforts,
U. S. Production	↓	Decreasing, reflecting declining reserves and depressed world price,
Imports of Foreign Oil	↑	Predicted to break 50 percent by 1990,
Conservation	↓	Conservation incentives have been weakened,
Development of Renewable Fuels	↓	Federal research and development budgets gutted,
Strategic Petroleum Reserve	↑	Slowly increasing,
Trade Deficit	↑	In 1987, the U.S. trade deficit increased for the sixth year in a row, and
Environmental Concerns	↑	Greenhouse effect, ozone nonattainment and acid rain head the list of growing concerns.

Source: South/West Energy Council

Environmental concerns, available domestic supplies and the possibility of backing out some imported oil, point to natural gas as a near-term link to the nation's energy future. Finally, national security, international considerations and regional impacts must be addressed.

An energy strategy must look beyond a four year term or even eight years. It must be a continuum of policy measures addressing weak points immediately and strengthening the very basis of the economy over the long term by shifting to a less dependent position. It must not of itself be the cause of economic dislocations by mandating drastic changes in energy supply or demand parameters. Ultimately it must reach for energy independence.

GOAL

It shall be the goal of the United States' energy strategy to provide a stable, reasonably-priced supply of energy in an efficient and environmentally-sound manner to meet the needs of its citizens, economy and national security interests. Energy independence shall be a long term goal of the United States.

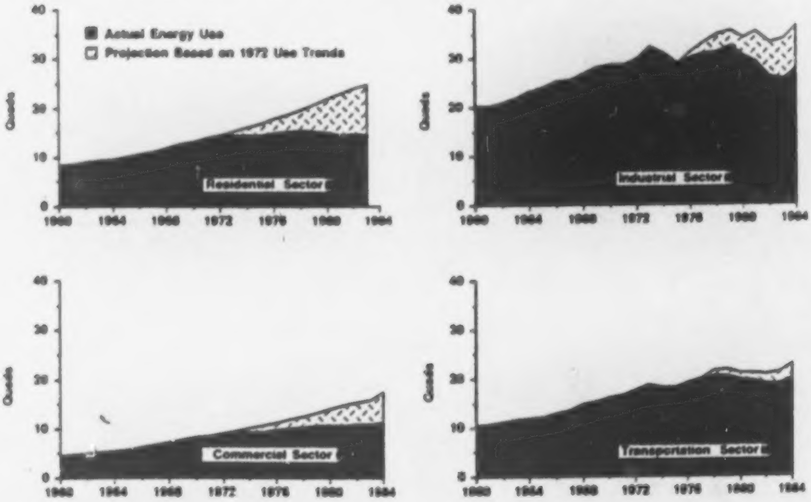
CONSERVATION

> *The future of productive and secure energy in our society rests not on how big our supply is but rather on how intelligent we are in using what we have.*
>
> Peter Bishop

The 1970s brought a new element to the nation's energy picture -- conservation. Driven by high energy prices, the oil embargo and federal policy, energy conservation efforts were undertaken in all sectors; residential/commercial, transportation, industrial and electric power generation. The result of those efforts is that the U. S. uses roughly the same amount of energy it did in 1973, although the economy has grown 30 percent in the intervening 15 years. Figure 1 demonstrates energy efficiency gains by sector.

FIGURE 1

All Sectors of U.S. Economy Now Use Energy More Efficiently

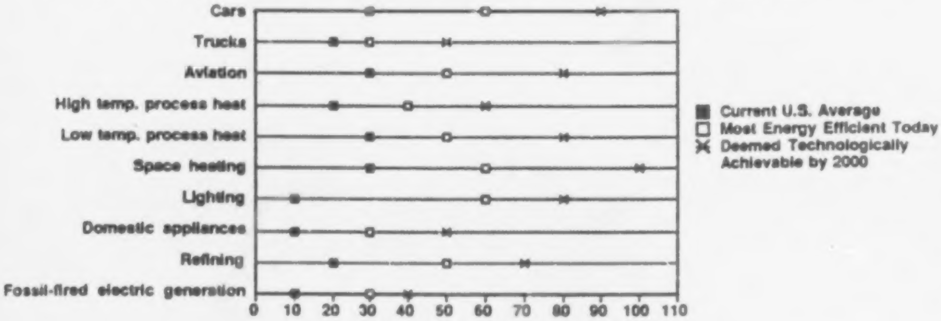


Source: U. S. Department of Energy (DOE/S 0057), p. 97.

However, there are still conservation gains to be made, based on existing technology. Americans use 2.4 times the energy per capita as the Japanese use. For instance, half the electricity used for lighting in the U. S. could be saved by energy efficiency strategies without sacrificing productivity.[1] Figure 2 illustrates end use efficiencies beyond 1973 averages.

FIGURE 2

Percentage Improvement In End-Use Efficiencies (Beyond 1973 Averages)*



Source: U. S. Department of Energy (DOE/S 0057), p. 106

Conservation, often referred to as energy productivity, means decreasing the amount of energy required to sustain a given level of goods and services.[2] Increasing the efficiency of our energy resources makes dollars invested more productive and eliminates certain environmental costs related to energy production.

In this regard, recycling and waste reduction programs are also energy conservation programs. Recycled paper requires 36 percent of the energy required to produce "new" paper and recycled aluminum 4 percent of such energy.[3]

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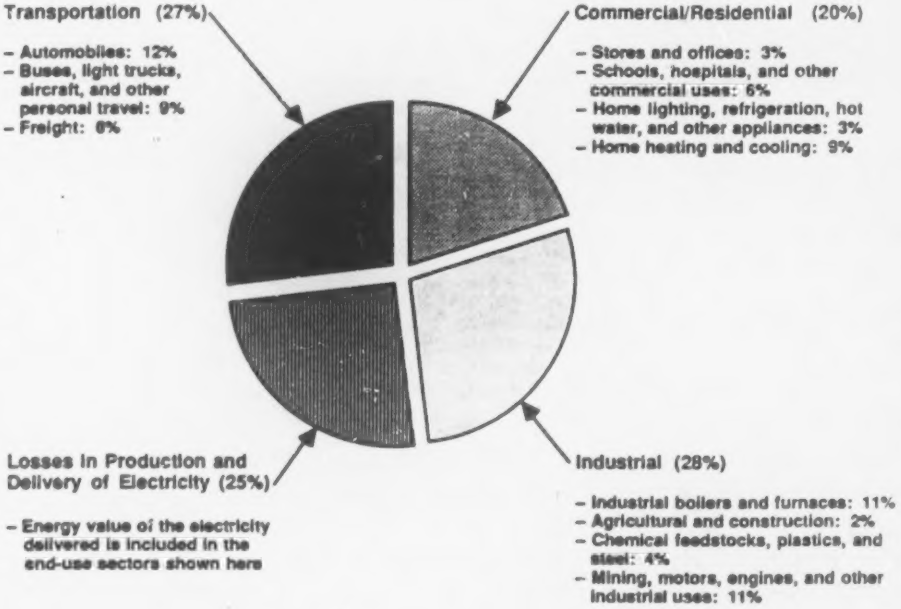
[1] Gibbons, p. 11
[2] Gibbons, p. 11
[3] Scull, p. 1

All energy consumers may benefit from conservation. As Figure 3 indicates, consumption of U.S. primary energy in 1985 was fairly evenly distributed among transportation, commercial and residential use, industrial consumption and losses in electricity production and transmission.

FIGURE 3

Consumption of all U.S. primary energy broke down like this in 1985:



Source: U. S. Department of Energy (DOE/S-0057), p. 100

Transportation represents over a quarter of our energy consumption. Fully 97 percent of our transportation runs on petroleum. The lack of alternative fuels that might replace gasoline and the strategic importance of crude to the U. S., make automobile fuel efficiency standards an essential component of any energy conservation policy.

In the area of commercial and residential consumption, building codes and appliance standards can have a real impact on energy savings. Refrigerator efficiency standards, part of a federal household appliance statute passed last year, are expected to reduce the need for power generation for household refrigeration by 1995 from as much as 107,000 Megawatts, as would have been indicated by earlier growth trends, to 21,000 Megawatts.[4]

About 73 percent of the fuel used by the industrial sector is petroleum and natural gas, strategically important fuels. Industrial conservation gains, primarily savings in oil and gas, have been noteworthy since the 1970s; energy use per unit of production has decreased about 20 percent.[5]

Future conservation in the industrial sector is expected to be derived mainly from new processes or process technology improvements. Recent studies have shown that industrial energy efficiency improvements are simply a matter of investment choice by large corporations and depend primarily on return on the dollar.[6] However, federal research on improving the economic efficiency of industrial processes may promote industrial conservation.

Electricity losses in production and delivery account for one quarter of the nation's primary energy consumption. Research into ways to eliminate these losses includes work on superconductivity, which would represent a major conservation breakthrough.

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[4] Cavanagh, p. 17
[5] U.S. Congress, OTA; p. xi
[6] Ibid.

CONSERVATION STRATEGY STATEMENT

It shall be the energy strategy of the United States to promote energy conservation, improving efficiency, in a variety of ways by setting or strengthening: Corporate Average Fuel Efficiency Standards for automobiles; energy efficiency provisions in building codes (including lighting efficiency standards); home appliance, heating and cooling unit efficiency standards; and waste recycling or reduction standards for industrial manufacturing.

Also, the federal government shall promote energy conservation education and fund research into conservation technologies. Basic energy conservation research funded by the government shall include superconductivity studies.

CRUDE OIL

Over the last 15 years, there have been three worldwide oil price crises. Two of those saw prices double or triple while the third saw the price of oil fall to one-third of its previous level. Economic dislocation in the U.S. as a result of those price swings was severe. Each of the price increases caused nationwide recessions while the price decrease meant severely depressed economic conditions in the oil producing states of the U.S.

In order to define an energy policy that would avoid such economic havoc, nationally and regionally, it is important to review the status of the U.S. with regard to crude oil. Table 1 illustrates U.S. reserve, production, import and consumption levels since 1970.

This nation has not seen a major increase in reserves since the addition of Prudhoe Bay and the North Slope fields in the early 1970s. The oil price crash of late 1985 decreased domestic exploration by half (48 percent) in 1986. Exploratory drilling fell still further in 1987, boding ill for U.S. reserve replacement.

Production in the U.S. has generally declined over the last 20 years with the exception of production increases for a period during the late 1970s and early 1980s. According to the U.S. Department of Energy, conventional U.S. oil production will begin a permanent decline by 1990.

In 1987 oil imports were up for the second year in a row. However, these imports were marked by a diversity of source. Indeed, the world oil price collapse in 1985 - 86 was import-related, as OPEC attempted to regain the world market share it had lost to new international producers. In the late 1970s OPEC supplied 77 percent of U.S. imports. In 1987, OPEC supplied 52 percent of oil imports to the U.S.

TABLE I

U.S. RESERVES, PRODUCTION, IMPORTS, AND CONSUMPTION

1970 - 1987

	'70	'71	'72	'73	'74	'75	'76	'77	'78	'79	'80	'81	'82	'83	'84	'85	'86	'87
RESERVES (Crude Oil)																		
(Billion Bls)	39.0	38.1	36.3	35.3	34.2	32.7	30.9	31.8	31.4	29.8	29.8	29.4	27.9	27.7	28.4	28.4	26.9	24.6
PRODUCTION (Crude Oil and Condensate)																		
(MMbl/d)	9.63	9.46	9.44	9.20	8.77	8.37	8.13	8.24	8.70	8.55	8.59	8.57	8.64	8.68	8.87	8.97	8.68	8.31
NET IMPORTS (Crude Oil and Petroleum Products)																		
(MMbl/d)	3.16	3.70	4.51	6.02	5.89	5.84	7.09	8.56	8.00	7.98	6.36	5.40	4.29	4.31	5.71	4.28	5.43	5.76
CONSUMPTION (Crude Oil and Natural Gas Liquids)																		
(MMbl/d)	14.70	15.21	16.37	17.31	16.25	16.32	17.46	18.43	18.85	18.51	17.06	16.06	15.30	15.23	15.73	15.73	16.28	16.56

Source: DOE-EIA, Arthur Anderson & Co. and Cambridge Energy Research Associates, South/West Energy Council

Oil consumption levels in the U.S. reflect the impact of conservation efforts begun during the 1970s. Although oil consumption has risen for the last two years, it is still more than 15 percent below the nation's high consumption mark of 1978. While national economic output has grown at an average rate of 2.5 percent, the U.S. uses no more energy now than was consumed in 1973. In fact, U. S. oil consumption in 1987 was below 1973 levels.

As domestic oil and gas fields mature, interest is turning to the maintenance of stripper wells and enhanced recovery to maximize recovery from known reserves. Primary production methods may leave as much as 60 percent of oil and gas reserves in place. Once a well is shut down ("plugged and abandoned"), it is unlikely that a new well will be drilled to recover remaining reserves.

Enhanced production techniques, now generally expensive, recover some of the remaining increments of oil and gas. Research and development is needed to reduce the cost of enhanced recovery of identified reserves.

In addition to "conventional" crude oil, this nation has a wealth of nonconventional oil resources. For instance, oil shale deposits are found in sedimentary rocks, principally in the western U.S. Kerogen is extracted as a liquid oil and hydrocarbon gases when the rock is heated.

The U.S. leads the world in oil shale reserves. Deposits in Colorado, Utah and Wyoming may exceed 1000 feet. The total extent of the resource is estimated at over 2.5 trillion barrels of oil.

Although shale oil can be substituted for refinery feedstock, it is currently expensive, relative to conventional crude oil. Estimates of the cost of production range from $30 to $60 per barrel. Environmental, as well as economic, factors concerning oil shale require further research, development, demonstration and commercialization projects.

Related to domestic production is the matter of multiple use of federal lands. There are 727.1 million acres of federally owned land in the United States. That is approximately one in three acres or 32 percent of the nation's land mass.

The vast majority of the federal lands is managed by either the Department of Interior or the Department of Agriculture. The Department of Interior (e.g. the Bureau of Land Management, the National Parks Service, and the United States Fish and Wildlife Service) manages half a billion acres while Agriculture (e.g. the National Forest Service) administers about 190 million acres.

Each administrative agency is authorized to manage public lands under different statutory grants of authority. Consequently each has developed a separate set of standards or regulations for addressing issues of multiple use or access.

Almost half (44 percent) of all federal lands are found in Alaska. In fact, 87 percent of the state of Alaska is owned by the federal or state government.

Referred to as this nation's most significant federal conservation measure, the Alaska National Interest Lands Conservation Act (the Alaska Lands Act), passed in 1980, added 104 million acres to federal ownership.[1] The area set aside by the Alaska Lands Act for public ownership is equivalent to the entire Northeastern part of the country; equal to the total land areas of the states of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey and Pennsylvania.

Importantly, it is in Alaska that about one-quarter of this nation's proved crude oil reserves are known to exist and 17 percent of the nation's natural gas is found. There are also large coal deposits in Alaska.

Those reserves are this nation's energy "ace in the hole." The oil will be needed shortly, the natural gas may well be needed over the next few decades, and the coal represents a long term energy asset. The preservation of multiple use rights with regard to federal lands, especially those in Alaska, is essential if the United States is to develop our energy resources in an environmentally sound-manner.

The outlook for crude oil has been summarized by the Department of Energy in Table 2. According to DOE, in less than 25 years, even if consumption is held relatively constant, the U.S. will depend on foreign imports for almost two-thirds of our supply of crude oil.

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[1] Quarles and Lundquist.

TABLE 2

1988
DOE CRUDE OIL OUTLOOK
(Quadrillion Btu's per Year)

	1986	1990	1995	2000	2010
Domestic Production	20	18.9	15.9	14.2	12.3
Imports	11.3	14.8	17.9	19.7	21.3
Consumption (Petroleum Liquids)	30.6	32.1	32.2	32.5	32.6

Source: DOE; South/West Energy Council

The U.S. balance of trade is even now suffering from oil imports. In 1987, the U.S. external trade deficit increased for the sixth year in a row. Oil represents about 10 percent by value of total U.S. imports. Increased oil imports will only put a greater burden on the trade deficit by sending capital abroad. The current rate of imports is costing the U.S. almost four billion dollars a month.

One means of mitigating the balance of trade problem may be to lift restrictions on the export of Alaskan crude oil. Sold on the world market, to nations like Japan, Alaskan oil will net-back a higher price and encourage the continued development of Alaskan resources, while offsetting some of the U.S. balance of trade deficit. Under the current regulatory scheme, Alaskan oil sells to domestic markets at a low, distorted price, discouraging development of resources in both Alaska and California.

Another national concern is this country's vulnerability based on oil dependency. The U.S. transportation sector is 97 percent dependent on oil. In fact, 62 percent of our oil is consumed by the transportation sector, the bulk of it for personal transportation.

There is no substitute for oil for the transportation sector. Oil dependence, as defined by DOE, is the short term inability to use fuel substitutes, due to either a lack of access to alternative fuels or limitations that make oil the only technically suitable fuel.

Interestingly, with one notable exception, the residential sector is not generally dependent on oil. The northeastern part of the country has limited access to natural gas and is the only region of the nation heavily dependent on fuel oil for home heating.

In addition to national security interests in a secure supply, this nation has a real interest in the exploration, production, downstream activities, jobs and investments in domestic producing regions. The producing states have been gutted by world oil price declines since 1985 resulting in high unemployment, a severe loss of state revenues, bankruptcies and bank failures. Unemployment approached twice the national average in many oil producing states.

A national energy policy based on economic stability can not tolerate severe regional disruption in spite of national prosperity. The economic health of producing regions of the nation must be considered in any national energy policy just as must the residential oil dependency of the Northeast. A national policy seeking economic stability must extend such stability to all regions.

In sorting through the trends that define this country's energy status, the Strategic Petroleum Reserve (SPR) is a bright spot of stability. The goal of the government is to fill the SPR to 750 million barrels. The SPR held 540 million barrels at the end of 1987. This is equivalent to 94 days of net petroleum imports, derived by dividing the end-of-year SPR stocks by the annual average daily net imports of all petroleum.

This measure may be somewhat misleading. In the event of an embargo, the U.S. Department of Defense would require a substantial portion of the SPR. Additionally, the U.S. is committed to supplying the needs of its allies in an embargo situation.

Beyond concerns relative to the size of reserve, there are questions about the rate at which crude oil could be distributed from the SPR to U.S. refiners. Recent tests indicate a maximum draw-down rate would not replace the amount currently supplied by foreign imports. Although it is highly unlikely that an oil embargo would completely cut off foreign supplies, economic and national security interests in avoiding supply disruption require that questions of supply and distribution capacity relative to the SPR be answered.

In addition to the SPR, there are privately held reserves belonging to energy companies. However, it appears that as the government-owned SPR continues to fill, private reserves are being limited to "minimum operating inventory" levels (MOI). The MOI levels are currently only slightly above the level necessary to maintain normal day-to-day operations. Thus the privately owned reserves, about 350 million barrels, would be of limited value in a shortage situation.

Related to the SPR is the U.S. commitment to the International Energy Program (IEP). The U.S. entered into the IEP in 1974. The IEP creates an International Energy Agency (IEA) within the Organization for Economic Cooperation and Development (OECD).

According to the agreement, a seven percent shortage situation authorizes a member country to ask the IEA to consider a sharing arrangement whereby member nations would draw down reserves to assist other members. The IEA's 21 members include the OECD members, basically our European allies, as well as Japan and Australia.

Of governmental reserves held by IEA nations, the U.S. has the greatest amount stockpiled. Japan has 160 million barrels or about 30 percent of the U.S. SPR, West Germany has 180 million barrels (about one-third of the U.S. reserve) and all other nations have 50 million barrels in reserve. The IEA arrangement would rely on private oil companies, 17 of whom are also signatories to the IEA agreement, to affect transfers of crude oil in emergency shortages.

In 1988, the U.S. House of Representatives passed a bill authorizing the extension of the IEA, and calling for a study by DOE on ways to improve cooperation between the United States and Western Hemisphere nations on energy and natural resource policies. This was an important step toward recognizing a Pan American Energy Alliance as proposed by the South/West Energy Council the previous year.

At a joint meeting in New Orleans in April, 1987, the South/West Energy Council and the Louisiana Energy Development Commission brought together representatives of the Canadian and U.S. governments and officials of Petroleos de Mexico and Petroleos de Venezuela to explore the mutual benefits of a Pan American Energy Alliance. Also attending the conference was a delegation of more than 15 Organization of American States ambassadors.

In requesting the DOE study as part of IEA reauthorization, the House Committee on Energy and Commerce cited the points that make a Pan American Energy Alliance attractive, points discussed nationally by the South/West Energy Council over the last two years –

- the global and interdependent nature of energy markets;
- the extent of the Western Hemisphere crude oil resource;
- the increasing frequency of international joint ventures relative to energy;
- international cooperation like the IEA or other trade agreements that limit the danger of oil supply disruption;
- the variety of measures that might raise the productive potential of Western Hemisphere nations including increasing the security of capital investments;
- mutual benefits for consumers, producers and creditors in Western Hemisphere nations; and
- the history of political and economic cooperation and stability enjoyed among Western Hemisphere neighbors.

Finally, any long-term view of oil policy has to return to the facts that three quarters of the free world's reserves are owned by OPEC nations, that U.S. reserves represent four percent of the free world's supply and that the U.S. represents 30 percent of the free world's demand (consumption). Given U.S. dependence on oil, economic vulnerability to oil price shocks and inability to produce a sufficient supply of oil, it is evident that this country, as part of an energy management plan to assure economic stability through energy security, must reach out and open a dialogue with world oil suppliers.

CRUDE OIL STRATEGY STATEMENT

It shall be the strategy of the United States to promote the environmentally-sound production of domestic energy resources, the conservation and efficient use of energy resources, and the management of energy imports.

It shall be the policy of the United States to promote and encourage domestic production of crude oil in an environmentally-sound manner in order to supply U.S. consumers with a secure source of petroleum, and provide a stabilizing influence to the world price of crude oil. In this regard the federal government shall provide tax and tax accounting incentives to oil producers for domestic exploration and development efforts with specific investment tax credits for research and development and enhanced oil and gas recovery.

It shall be the policy of the United States to assure that energy resources are utilized in a manner that recovers the most energy value possible. Similarly, it is the strategy of the United States to alleviate oil dependency by funding research and development to perfect alternative fuels, particularly for the transportation sector and primary modes of personal transportation. Enhanced oil and gas recovery from known reserves shall be promoted, and a research, development, demonstration and commercialization program for unconventional sources of crude oil shall be pursued through a cooperative effort among industry, higher education and national laboratories.

It shall be the policy of the federal government to manage U. S. imports by diversifying import suppliers, allowing the exportation of Alaskan crude oil, pursuing a Pan American Energy Alliance with Western Hemisphere producing nations, considering technological barriers to the use of vast reserves of unconventional crude oil in the Western Hemisphere and opening a dialogue with suppliers worldwide. It shall also be the policy of the United States to continue filling the Strategic Petroleum Reserve, at least to its present goal of 750 million barrels.

It shall be the strategy of the United States to support active management of federal lands and Outer Continental Shelf areas in accordance with principles of multiple use and to recognize the potential that public lands hold, particularly in Alaska, for environmentally-sound development of energy resources.

COAL

In terms of reserves, coal is America's leading fuel. Indeed, one-fourth of the world's coal is in the United States. It is a ubiquitous fuel in this country. Coal is found in 38 states and mined in 27.

Primary coal regions are Appalachia, the Midwest, and the Rocky Mountain area. As a general rule, coal from northern Appalachia and the Midwest has higher energy (Btu) values than does coal from central Appalachia, the Rockies and the Northern Great Plains, but higher sulfur contents as well.

The U.S. produced about 900 million tons of coal in 1984 and has recoverable reserves of 239 billion tons. At the present rate of consumption, our coal reserves would provide fuel for more than 250 years. Coal is consumed in all fifty states. Ten percent of U.S. coal production is exported to 50 countries around the world.

Coal has been mined commercially in this nation since 1748. At the beginning of this century, it supplied 90 percent of the country's power. By 1975, coal had slipped to supplying 18 percent of our energy demand. The 1970s oil embargos benefitted U.S. coal producers and by 1987, coal supplied 24 percent or about one-fourth of our nation's energy.

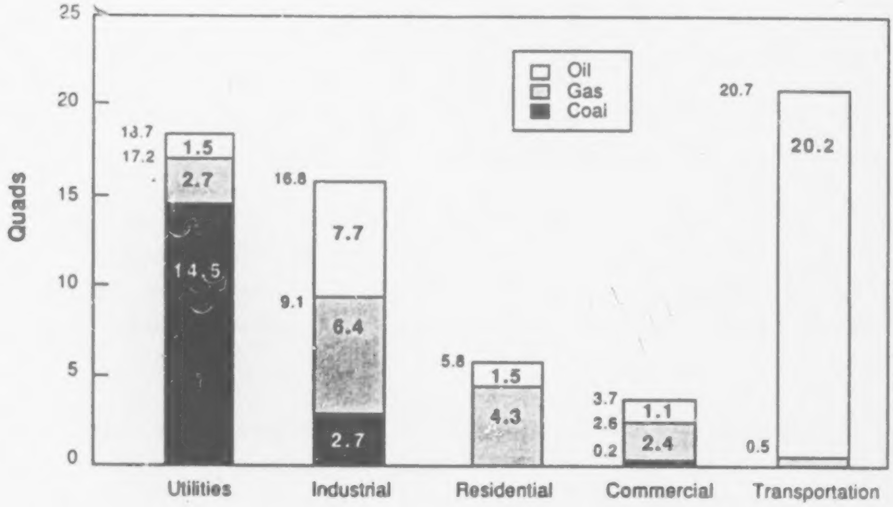
Most coal (60 percent) is transported by rail in the U.S. Coal is the major revenue source for U.S. railroads. Barges, ships and trucks also deliver coal to market. Large coal-carrying ships called colliers transport coal for export from Norfolk, Virginia and other ports.

Some powerplants are located at the edge of the mine. These so-called "mine-mouth" plants are supplied by trucks, rail or conveyor belts. There is one coal slurry pipeline in the nation, which runs 273 miles from Arizona to a powerplant in Nevada.

In many cases though rail is the sole means of transporting coal to consumers. Congress and the coal and railroad industries continue to explore means of alleviating impacts on captive shippers.

Coal is primarily used to fire utility powerplants, producing over half (55 percent) the electricity generated in the U.S. Aside from a very small amount (1 percent) used by the commercial sector, coal is consumed in industrial boilers and processes (16 percent) and utility powerplants (83 percent). Fossil fuel consumption by sector is illustrated in Figure 1.

FIGURE 1
U.S. FOSSIL FUEL CONSUMPTION BY USE SECTOR
(1986)



Source: DOE/FE-0102, p. 5.

Coal consumption is expected to increase slowly in the U.S., primarily in the utility (electricity) sector. Increased use of coal by industrials is expected to be slight because of maturing markets for down-stream products most important to coal (chemicals, cement, paper, primary metals and food processing) and a shift in industry to small scale cogenerating units (producing both process steam and electricity). Coal faces strong competition from natural gas in cogeneration units.[1]

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[1] Resource Data, Inc., p. 5.

On the world market, the U.S. is often a high-priced exporter because of higher labor and transportation costs. Western Europe will probably remain this country's principal coal export market, as Pacific Rim importers seek lower cost coal from Australia, South Africa and China. Despite higher prices, the U.S. will remain a swing exporter because of its ability to provide large amounts of quality coal on short notice.

Since significant increases in industrial consumption and exports are not predicted, the future of coal consumption rests with electric utilities. Environmental concerns and aged technology are two hurdles facing expanded coal usage by utilities. Primary among environmental concerns is acid rain. However, the "greenhouse effect" is emerging as an environmental concern linked to coal and other fossil fuel combustion.

Scientists are presently researching what effect acid rain or acid precipitation may have upon agricultural crops, forests, aquatic systems (including fish, streams, and lakes), materials, and human health and visibility. Acid rain precursor emissions are sulfur dioxide, nitrogen oxide and volatile organic compounds.

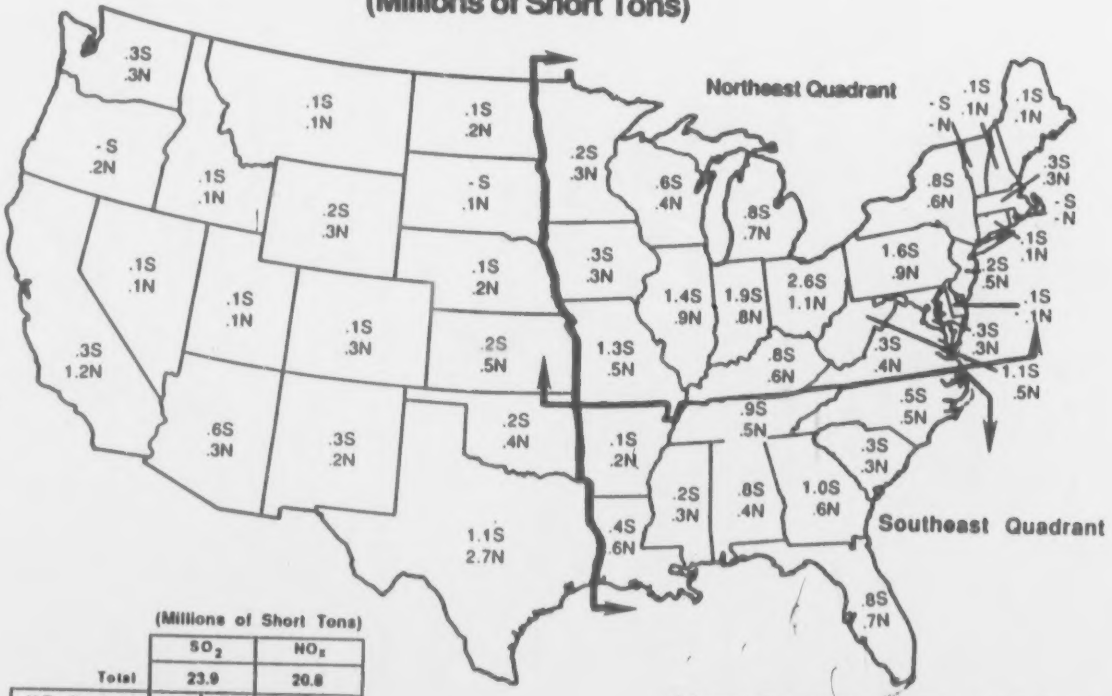
Sulfur dioxide (SO_2), nitrogen oxide (NOx) emissions and volatile organic compounds (VOC) are found in every state. Different emissions are thought to be responsible for different effects. Sulfur dioxide is the "precursor of interest" with regard to chronic lake acidification. Relative to crop damage, nitrogen oxide is the primary precursor.

Acid rain precursor emissions, SO_2, NOx, and VOC, are of natural origin as well as man-made. Man-made acid rain has been present in the Northeast since the turn of the century. Rain is considered acidic when it has a ph of 5 or less.

In 1985, 25 million tons of SO_2 was emitted into the air in the U.S. -- that is approximately the same amount of SO_2 emissions released in the 1920s. As Figure 2 indicates, in 1984 about 83 percent of SO_2 emissions were in the Eastern U.S. Almost half (48 percent) of all SO_2 emissions in the U.S. were from Northeastern utility plants. Figure 3 details sources of SO_2 emissions.

FIGURE 2

Emissions of SO_2 and NO_x in Continental U.S. (1984)
(Millions of Short Tons)


Northeast Quadrant
Southeast Quadrant
.3S .3N
-S .2N
.3S 1.2N
.1S .1N
.1S .1N
.1S .1N
.1S .1N
.2S .3N
.1S .3N
.6S .3N
.3S .2N
.1S .2N
-S .1N
.1S .2N
.2S .5N
.2S .4N
1.1S 2.7N
.2S .3N
.3S .3N
1.3S .5N
.1S .2N
.4S .6N
.6S .4N
1.4S .9N
.8S .7N
1.9S .8N
2.6S 1.1N
.8S .6N
.9S .5N
.2S .3N
.8S .4N
1.0S .6N
.3S .3N
.8S .7N
.5S .5N
.3S .4N
1.6S .9N
.8S .6N
-S -N
.1S .1N
.1S .1N
.3S .3N
-S -N
.1S .1N
.2S .5N
.1S .1N
.3S .3N
1.1S .5N

(Millions of Short Tons)

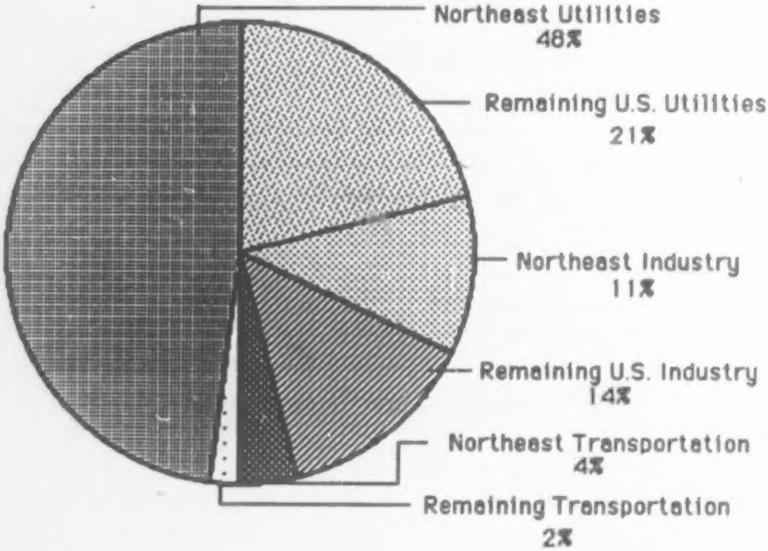
	SO_2		NO_x	
Total	23.9		20.8	
N.E. Quadrant	14.9	62.3%	9.5	45.5%
S.E. Quadrant	4.9	20.5%	4.1	19.6%

S = Sulfur dioxide
N = Nitrogen oxides

Reference: "Estimated Monthly Emissions of Sulfur Dioxide and Oxides of Nitrogen for the 48 Contiguous States, 1975-1984." ANL/ERS-TM-318; December 1986. (Dividing Metric Value by 0.9072)

Source: DOE/FE - 0083, p. 21

FIGURE 3
1986
Sources of U.S Sulfur Dioxide Emissions



Source: DOE/FE-0083 p. 23.

In the period 1975 to 1985, EPA estimates that utilities have spent $60 billion to capture SO_2 emissions. The impetus behind declining SO_2 emissions was the 1970 Clean Air Act and its 1977 amendments.

The three options utilized in this effort were flue gas scrubbing, coal cleaning, and coal switching (the substitution of higher priced low sulfur coal for high sulfur coal). The investment has paid off. From 1973 to 1985, the use of coal by utilities increased by 78 percent while SO_2 emissions decreased by 23 percent.

By contrast, emissions of NOx in the U.S. have remained fairly constant since the 1970s. As Figure 2 indicates, of the 20 million tons of NOx released in 1984, 65 percent originated in the Eastern part of the country. Forty-five percent of NOx emissions originated in the Northeast quadrant of the nation, where fully half the country's population resides.

Nationally, NOx emissions are less concentrated by source than are SO_2 emissions. A little less than one-third (32 percent) is attributable to utilities, and a little more than one-third (33 percent) is attributable to the transportation sector. Of the remaining third, 19 percent is generated by industry and 13 percent is attributable to "other sources," like forest fires and open burning.

In North America, natural sources are estimated to contribute six percent of total SO_2 emissions and up to 12 percent of NOx emissions. However, natural emissions of volatile organic compounds (35 million tons) in the U.S. exceeds man-made emissions (21 million tons). Ninety percent of the natural volatile organic compounds are attributable to forests.

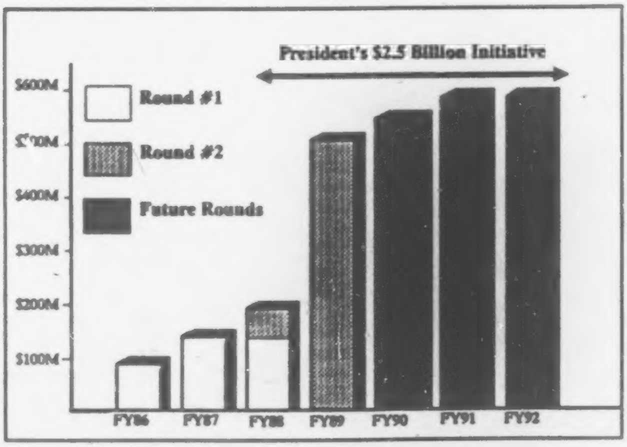
Thirty-eight percent of VOCs released are attributable to the transportation sector. Due largely to federal regulations, vehicles currently being produced emit 90 percent fewer volatile organic compounds than did vehicles manufactured in the 1970s.

In 1980, Congress passed the Acid Precipitation Act which created the National Acid Precipitation Assessment Program (NAPAP), a comprehensive 10 year research plan. The NAPAP has released more than a thousand papers to date and will issue its final report in 1990. The purpose of the NAPAP is to increase general understanding of acid deposition while testing several specific hypothesis relating to environmental damage and acid rain.

In 1985, the U.S. and Canadian governments each appointed a Special Envoy to study the acid rain problem and suggest means of resolving the transboundary pollution problem. In 1986, the Special Envoys' report recommended that the U.S. undertake a five year, five billion dollar effort, jointly funded by industry and government, to demonstrate an expanded menu of environmentally-clean coal base technologies.

Subsequently, in 1986, President Reagan unveiled the Clean Coal Technology Program, administered by DOE. It is proposed that the Clean Coal Technology Program be funded as illustrated in Figure 4.

FIGURE 4
Proposed Funding For DOE's Clean Coal Technology Program



Source: DOE - FE, Fossil Energy Review, January - February 1988, p. 5.

The federal government's proposed $2.5 billion funds will be used to share in the financing of demonstration projects to prove commercial feasibility of new clean coal technologies. There are three categories of projects: retrofitting, repowering and conversion.

Retrofitting (e.g. adding pollution reduction equipment to older plants) impacts older coal fired power units for the remainder of their useful plant life. Because many of the newer plants were built subject to Clean Air Act amendments, the bulk of acid rain precursor emissions are attributable to older plants. Examples of retrofitting technologies are listed in Table 1.

TABLE 1

Retrofit Technologies

Pre-Combustion Cleaning

Physical
- Fine Grinding (micronization)
- Advanced Froth Flotation
- Heavy Media Cyclones
- Micronization w/Limestone
- Microbubble Flotation

Physiochemical
- Molten Caustic Leaching
- Organic Solvent

Microbial
- Bioleaching

Combustion Modification

Combustor/Burner Types
- Slagging Combustors
- Rotary Cascading Bed Combustors
- Entrained Combustors
- Limestone Injection Multistage Burners
- Gas Reburning

Fuel Types
- Coal-Water Slurries
- Coal-Gas Co-Firing
- Coal-Water-Gas Co-Firing

Post-Combusiton

In-Duct Injection
- Sorbent Injection
- Catalytic Reduction

Post-Combustion Devices
- Vanadium Pentoxide Afterburners
- Ternary Boiler w/Pollutant Capture
- Furnace Injection w/Water Activation Reactor
- Post-Combustion Oxidation w/Fluid Bed Lime Reactor
- Fluid Bed Absorption

Advanced Scrubbers/FGD Devices
- Spray Dryers
- Regenerable Scrubbers
- Dual Alkali Scrubbers
- Electron Beam Scrubbers
- Ion Exchange Membrane FGD
- Magnesium Enhancements
- NO_x Specific Scrubbers
- Electrode Precharger Enhancements to Precipitators
- High-Temperature Baghouses

Source: DOE/FE - 0107, p. 11.

Repowering means replacing parts of the original plant with units that will limit emissions while increasing the efficiency of the plant. Much of the technology used in existing plants dates back to the 1940s. Repowering can improve electric power output by 150 - 170 percent, while reducing SO_2 emissions by 99 percent and extending plant life by 30 years according to DOE officials.[2] Repowering technologies are listed in Table 2.

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[2] Siegel, p. 5.

TABLE 2

Repowering Technologies

Fluidized Bed Combustion	Gasification-Based	Advanced Options
Atmospheric • Circulating Bed • Bubbling Bed **Pressurized** • Circulating Bed • Bubbling Bed **Hybrid Designs** • Bubbling-Circulating Bed • Coal Pyrolyzer/Fluid Bed	**Gasifier Types** • Fixed Bed • Fluid Bed • Entrained Flow • Rotary Kiln-type **Gas Cleanup systems** • Conventional "Cool" Gas Cleanup • Zinc Ferrite Hot Gas Cleanup • Ceramic Filter Cleanup • In-situ Desulfurization	**Gasification w/Fuel Cell** **Magnetohydrodynamics** **Direct Coal-Fired Turbines**

Source: DOE/FE - 0107, p. 12.

Conversion techniques produce liquid and gaseous fuels from coal. This makes coal readily available for use by industrial, commercial, residential and transportation sectors. In the case of the transportation sector, it could have a positive impact on U.S. dependence on crude oil. Conversion technologies are listed in Table 3.

TABLE 3

Conversion Technologies

- Mild Gasification
- Gasification with Once-Through Methanol Production
- Underground Coal Gasification
- Gasification in Indirect Liquefaction
- Liquefaction
- Coal/Oil Coprocessing

Source: DOE/FE - 0107, p. 13.

Round One of the Clean Coal Technologies Program funded seven projects, valued at $750 million, of which $225 million will be contributed by the federal government. The Second Round Solicitation drew 54 proposals from 20 states. DOE selected 16 projects located in 12 states for funding under Round Two. Investments in the Second Round projects are expected to total about $1.3 billion, of which over 60 percent ($800 million) will be private sector monies.

In addition to cleaning up this nation's environment, the Clean Coal Technologies Program gives the United States an opportunity to gain technological leadership and export not only coal, but clean, efficient coal-burning technologies abroad as well. It also meets U.S. commitments to Canada to address this issue of mutual concern.

Just as concerns about the acid rain problem transcend the U.S. - Canadian border, the possibility of global warming transcends national boundaries as well. The U.S. Environmental Protection Agency (EPA) points out that "greenhouse gases" such as carbon dioxide, nitrous oxide, methane and others occur naturally in the atmosphere, serving as a thermal blanket for the planet. EPA states that there is scientific consensus that an increase in greenhouse gas emissions will result in climate change, popularly referred to as the Greenhouse Effect.[3]

Environmentalists are pushing for tougher acid rain precursor emission standards, maintaining that there is no reason to delay strengthening such standards since demonstrated technologies exist to reduce acid rain precursor emissions. The Administration has urged delay of new standards until the NAPAP report is final and the Clean Coal Technology demonstration projects results are available. Moreover, DOE officials cite problems with current major control technologies.

Pointing to flue gas scrubbing expense and energy loss (five to eight percent of the powerplant's energy is spent to power the clean up process) and the economic dislocation (loss of jobs and revenues in high sulfur coal areas) of switching to low sulfur coal, DOE claims, "additional sulfur emission reductions pose severe difficulties for conventional controls."[4] The Reagan Administration has looked to the early to mid 1990s as the critical time for decision making, both in terms of continuing reliable electric service and meeting environmental objectives.

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[3] EPA, p. 1.
[4] DOE/FE - 0083, p. 4.

COAL STRATEGY STATEMENT

Coal is America's leading fuel in terms of reserves. It holds the promise of long-term energy security for this nation. However, its current use is constrained by aged technology and environmental concerns.

The Clean Coal Technology Program addresses both these constraints and offers additional benefits as well. The Program commits 5 billion dollars, half federal government funding and half private sector monies, to demonstrate improved technology.

These projects not only burn coal in an environmentally-safe manner, but more efficiently as well. Many environmental concerns can be satisfied through the aggressive development and implementation of clean coal technologies which will allow the use of all types of coal reserves economically and cleanly without environmentally significant by-products or waste materials.

The Program will make the U.S. a technological leader, with the ability to export not only coal but clean, efficient coal technology to other nations of the world. The program also fulfills this nation's promise to its neighbor, Canada, to forcefully address transboundary environmental problems.

It shall be the strategy of the United States that the Clean Coal Technology Program be continued for its environmental, conservation and export potential.

NATURAL GAS

The United States is at a policy crossroad of environmental protection and energy security. One fuel promises to deliver the country into the next century in a cleaner, more efficient manner, while offering a degree of independence from imported oil, thereby increasing domestic energy security. That fuel is natural gas.

Natural gas is not a long-term energy panacea, but a link between the nation's current energy situation, with its attendant environmental and security problems, and a more secure energy future that maximizes energy conservation, renewable energy use, and consumption of other energy resources in a clean, efficient manner.

Today natural gas accounts for roughly one-quarter of the energy used in this country; 16.5 trillion cubic feet (Tcf) of gas was produced in 1987 and 17 Tcf was consumed. That same year the U.S. had about 187 Tcf in proven domestic reserves of natural gas (including Alaska's).

However, as Table 1 indicates, geologists calculate that the U.S. has upwards of 600 Tcf of recoverable gas at a price of less than $3 per thousand cubic feet (mcf). Additionally, Canada, the major importer of natural gas to the U.S., has reserves of 73 Tcf, and a reserves/production ratio of 27 years. Potential reserves of up to 500 Tcf are estimated for Canada. Under the Free Trade Agreement, Canadian export restrictions will be removed, making Canadian reserves readily available for purchase and consumption in the U.S.

Mexico also has natural gas reserves, but is not now exporting production. Liquified natural gas, relatively expensive because of processing and handling costs, is available on the world market.

TABLE 1. TOTAL UNITED STATES GAS RESERVES AND RESOURCES ASSESSED

	TECHNICALLY RECOVERABLE GAS, Tcf*	RECOVERABLE GAS BY PRICE**	
		<$3./Mcf	$3.-5./Mcf
LOWER 48 (Conventional)			
PROVED RESERVES, 12/31/86, ONSHORE AND OFFSHORE	159	159	...
INFERRED RESERVES/ PROBABLE RESOURCES, 12/31/86, ONSHORE	85	85	...
INFERRED RESERVES, 12/31/86, OFFSHORE	23	23	...
EXTENDED RESERVE GROWTH IN NONASSOCIATED FIELDS, ONSHORE	119	56	18
GAS RESOURCES ASSOCIATED WITH OIL RESERVE GROWTH***	61	30	11
UNDISCOVERED ONSHORE RESOURCES	219	88	59
UNDISCOVERED OFFSHORE RESOURCES****	134	54	28
SUBTOTAL	800	495	116
LOWER 48 (Unconventional)			
GAS IN LOW-PERMEABILITY RESERVOIRS	180	70	49
COALBED METHANE	48	8	4
SHALE GAS	31	10	5
SUBTOTAL	1,059	583	174
ALASKA			
ALASKA: RESERVES	33	7#	0
ALASKA INFERRED RESERVES (COOK INLET AREA)	3	3	0
ALASKA UNDISCOVERED, ONSHORE AND OFFSHORE	93	2#	2#
SUBTOTAL	1,188	595	176
TOTAL	1,188	595	176

*Volumes of gas judged recoverable with existing technology

**Volumes of gas (Tcf) judged recoverable with existing technology by Review Panel at wellhead prices shown (1987$)

***Judged at oil prices of <$24./bbl and $24.-40./bbl

****Outer Continental Shelf

#Component in southern Alaska

Source: DOE/W/31109-H1, p. 2.

Natural gas is produced in 32 states and in federal Outer Continental Shelf (OCS) areas. Over three-quarters of domestic production comes from Texas, Louisiana, Oklahoma, and the federal OCS. Imports from Canada augment domestic production, averaging about 5 percent of U.S. consumption.

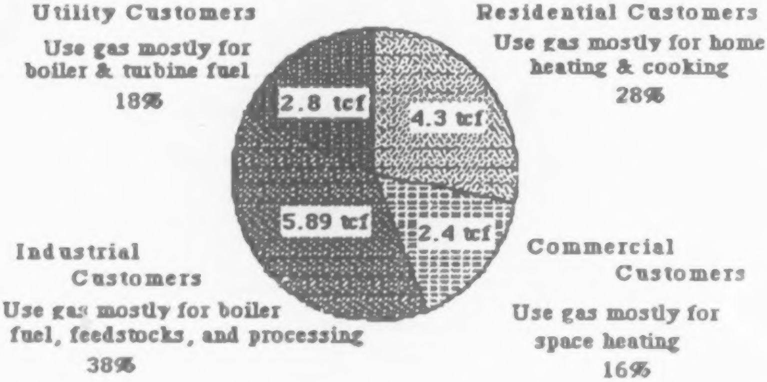
Natural gas pipelines connect every state in the Lower 48 except Vermont, which is supplied by a pipeline from Canada. Gas is transported to the major pipelines from the wellhead by a gas gathering system. From the transmission pipeline, it is generally bought at the "city gate" and distributed by local distribution companies (LDCs).

Major producing states like Texas, Louisiana, and Oklahoma have developed intrastate pipeline systems that operate only within the state. Historically, these pipelines have sold to LDCs, as well as directly to industrials. Intrastate lines and LDCs are subject to state regulation, while interstate transactions, and until relatively recently, all wellhead prices, are subject to federal regulation by the Federal Energy Regulatory Commission (FERC).

Almost a tenth (9 percent) of U.S. natural gas production is consumed in production and transmission activities related to delivering the gas to the end user (as lease, plant and pipeline fuel). End-users include electric utilities, residentials, commercials and industrials. Figure 1 illustrates end-use consumption by sector.

FIGURE 1

NATURAL GAS CONSUMPTION BY END-USE SECTOR, 1987



Source: DOE/S-0057, p.118, updated with DOE data.

Federal regulation has played a major role in the history of the U.S. natural gas industry. Shortages, now widely attributed to market distortions caused by regulation, shut down schools and factories in 1977. The American public was left with the impression that this country had run out of natural gas.

In fact, natural gas was available on intrastate systems where price was not regulated. Left to function as a market, the price rose somewhat on intrastate systems, but demand was met. Interstate natural gas shortages occurred in the same decade as did foreign oil embargoes, setting the political stage for the National Energy Act of 1978.

Actually five separate bills in one, the National Energy Act package included the Fuel Use Act which prohibited new natural gas boilers for electric utilities, and required a phase-out of natural gas use in existing boilers. Gas was also prohibited for use in larger new industrial boilers. The use of coal was encouraged with tax credits, while tax breaks were withheld from oil and gas boilers.

Energy conservation and efficiency were promoted with tax credits for industry and loan programs for residentials, schools, and hospitals. The Natural Gas Policy Act (NGPA) initiated the deregulation of wellhead pricing of natural gas.

On the heels of NGPA natural gas wellhead price deregulation, FERC began the deregulation of the natural gas transmission industry. FERC Order 436, issued in 1986, adopted an open access policy for interstate gas pipelines.[1]

Traditionally, producers sold their gas, under long term contract, to the pipeline located closest to the wellhead. The pipeline then ran pipe to an LDC, and sold gas owned by the pipeline, known as "system supply gas". FERC reasoned that neither the producer nor the LDC had competitive options and that market efficiency and price were suffering. FERC declared that, in the name of competition, producers and LDCs deserved open access to the nation's interstate natural gas pipeline system.

In Order 436 FERC turned the traditional scheme upside down. It essentially forced interstate pipelines to transport natural gas for others. Theoretically producers could sell their gas to whomever they cared to deal with and force the pipeline to act as a transporter. LDCs could shop around for the best deal and then line up transportation for gas they had purchased.

As FERC began transmission deregulation the natural gas market was a troubled one. By 1986, both price and demand for natural gas had plummeted. The price of natural gas fell by more than 25 percent between 1984 and 1986, from a U.S. wellhead average of $2.66 to $1.94 per Mcf. It continued its downward trend to a national wellhead average of $1.67 per Mcf in 1987.

Demand suffered under the cumulative effects of industrial conservation and natural gas prohibitions imposed by the National Energy Act of 1978. Declining demand was aggravated as industrials installed fuel-switching capacity.

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[1] See Arthur Andersen and Cambridge Energy Research Associates, p. 10-13.

It is estimated that as many as 80 percent of industrial boilers now have dual capacity to burn either natural gas or residual fuel oil.[2] Industrials with dual capacity may shop between the two fuels for a price advantage that may amount to pennies per thousand Btu's. Dual capacity also eliminates dependence on one type of fuel and offers some protection against shortages like the one in the 1970s on the interstate natural gas market. The proliferation of dual capacity industrial consumers has tied the price of natural gas to the price of residual fuel oil.

From a peak in the early 1970s, industrial and electric utility demand for natural gas had fallen by 35 percent in 1986. Surplus deliverability, also known as the gas "bubble," further depressed prices. Disappearing markets, price instability, and regulatory revisions sent an industry that had traditionally dealt in 20 and 30 year contracts into a month-to-month spot market.

The situation was complicated by obligations incurred by pipelines when supply looked short. In the bullish natural gas market of the early 1980s, pipelines had routinely signed take-or-pay contracts to assure adequate system gas supplies. Take-or-pay provisions require the purchaser to take the gas or pay for it (even if not taken). Pipeline take-or-pay liabilities mounted into the billions of dollars.

In a 1987 decision, a U.S. Court of Appeals upheld FERC's authority to encourage competition but asked the regulators to revisit a few issues not addressed in Order 436, particularly resolution of take-or-pay problems. Subsequently, FERC's Order 500 provided a mechanism for crediting gas transported for producers against take-or-pay balances. Settlement guidelines were also approved for take-or-pay obligations, assisting open access pipelines in the spreading take-or-pay settlement losses.

The FERC orders changed the primary business function of interstate pipelines from marketing (which included moving gas owned by the pipeline to buyers) to transporting (simply moving gas owned by others). During the period 1982 to 1987, the percentage of gas transported for others by interstate pipelines increased from 3 percent to 56 percent; the percentage of natural gas throughout sold by interstate pipelines fell from 97 percent to 44 percent.[3]

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[2] Crosby.

[3] Interstate Natural Gas Association of America.

In the world of open access and competition as defined by FERC, there remains a regulated sector of the industry. LDCs are regulated by the state rather than FERC.

Industrial customers, many of whom have installed dual-fired capacity in order to gain a competitive price advantage, are equally as aggressive in their gas purchasing practices. Many are seeking gas from sources other than their traditional supplier, the LDC. Termed the "by pass issue" because of industrials' attempts to by-pass the LDCs and purchase gas on the open market, it pits producers, pipelines and industrials against LDCs and state regulators against their federal counterparts.

LDCs point to their statutory obligation to serve all customers and the substantial capital investment which that obligation requires. LDCs argue that if industrial customers leave the system, fixed costs may shift to those customers without the option to leave -- principally residentials.

Industrials and pipelines respond that it is futile to stand in the way of economic efficiency, that the producer and pipeline sectors of the industry have emerged alive, if somewhat battered, from their regulatory transformation to a competitive system. Prices have decreased, the industry has survived, and the LDCs have no claim to special treatment.

Producers and pipelines fear that industrials, frustrated in attempts to reduce their purchase price of gas, will simply switch to residual fuel oil, thereby further eroding the natural gas market. Producers maintain everyone loses in that case; producers, pipelines, and LDCs lose markets while residentials may be stuck assuming fixed costs.

A second regulatory concern of LDCs relates to balancing security of supply (longer term, more expensive gas contracts, if available) with economy considerations (i.e. price to residentials). LDCs are uncertain how state regulators will weigh competing interests.

These questions and others resulting from the interface between federal and state regulatory schemes have prompted some LDCs to call for a designation of state regulatory primacy or, alternatively, concurrent, shared state-federal regulation. The resolution of such questions will face legislators and Congress alike over the next few years.

Although the price is low, the supply secure, the distribution system well developed, and the technology efficient, a primary impetus behind increasing use of natural gas is concern for the environment. Importantly, gas is also viewed as a means of backing out imported oil.

Environmental concerns, particularly related to air quality, acid rain and global warming, are steering policy makers towards increase use of gas. Burning natural gas produces significantly less sulfur dioxide (SO_2), nitrogen oxides (NOx), small particles, carbon monoxide (CO), and carbon dioxide (CO_2) than does oil or coal combustion. Virtually no reactive hydrocarbons are emitted from natural gas combustion.[4] In contrast to oil - or coal-fired units, natural gas consumption at stationery sources creates no ash or sludge.[5]

Increased use of natural gas, in the industrial, electric utilities, and transportation sectors would reduce air pollution problems. Industrials and electric utilities alike are attracted to combined cycle gas turbine technology. When used in efficient cogeneration units, the exhaust gases from the natural gas-fired turbine are hot enough to power a steam generator, providing two types of power from the single energy source.

Turnkey cogeneration units are available for industrials, and utilities are looking at combined cycle generation for smaller additions of power capacity. Both sectors are concerned about air quality standards.

Natural gas is a candidate for fuel substitution on an environmental basis. For instance, in warm summer months, when ozone and acid precipitation is most likely to be formed, natural gas might be substituted for oil. Further, co-firing natural gas with other fossil fuels actually "scavenges" pollutants like NOx which usually result from combustion of such other fuels.[6] Thus, co-firing may reduce harmful emissions dramatically.

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[4] Campbell and Martin, p.30.

[5] Dring and Aboud, p.6.

[6] Campbell and Martin, p. 31.

Air quality considerations are also behind the most significant movement in the nation to implement alternate fuel vehicles -- California's methanol fuel vehicle program. Populous California has significant air quality problems. In its 1987 Biennial Energy Report, the California Energy Commission made three recommendations relative to alternate fuel vehicles:

- California's governmental agencies in nonattainment air basins should adopt programs by 1989 to substitute methanol for 50 percent of their use of motor fuels by the year 2000;

- The federal government should provide Corporate Average Fuel Economy (CAFE) credits for methanol as an incentive to auto manufacturers to produce vehicles capable of using methanol fuels; and

- To provide consumers with transportation fuel use options, California should support the introduction of flexible fuel vehicles into the transportation market.

Of all alternate fuels for vehicles now under consideration, a DOE report recently identified methanol as the preliminary choice for substitution on the basis of technical acceptability, economic competitiveness, environmental acceptability, as well as availability and accessibility.[7]

Although methanol may be produced from a variety of renewable (biomass) and non-renewable (coal) feedstocks, over two-thirds of the methanol produced in this country is from steam reforming of natural gas. Table 2 compares the four leading alternate fuels for replacement of gasoline in vehicles.

In addition to addressing environmental concerns, the use of natural gas for vehicular power would be a first, albeit small, step to reducing U.S. dependence on crude oil in the transportation sector, thus improving U.S. energy security.

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[7] DOE/PE-0080, p. 22.

Despite these apparent benefits questions are being raised about methanol. The first question is whether the domestic natural gas resource base is large enough to provide natural gas feedstock for methanol fuel or would a large scale conversion to methanol fuel only increase dependency on foreign energy sources.

A second concern relates to the cost of retrofitting present transportation, storage and distribution systems or developing new systems to handle methanol. Some metals, elastomers and plastics in existing terminals, tank trucks and service stations may be incompatible with methanol.

A third concern relates to air quality arguments. If "flexible fuel vehicles" (those which use gasoline, methanol or a blend of the two) are promoted, the emission control benefits of methanol may be lost to less than optimal engine operation levels.

Dependence on crude oil is not limited to the transportation sector. The Northeast residential sector, which has limited access to natural gas, is also oil dependent. Interstate natural gas pipelines proposed to serve the region are under consideration at FERC.

Some of the competing projects would interconnect only with Canadian gas pipelines. Domestic producers have urged federal regulators to assure that any new markets opened by interstate pipelines, have, at a minimum, interconnects that would allow domestic producers, as well as Canadian gas, access to new markets. In the new deregulated, extremely competitive natural gas business, access to markets is tantamount to assuring viability of producing regions.

Natural gas is the link to America's energy future. In that future, energy savings and environmental concerns must be as important as power considerations. Natural gas gives the U.S. an opportunity to move closer to environmental goals, while enhancing energy security as well.

Table 2 — Summary of Fuel and Vehicle Characteristics When Alternative Energy Sources Replace Gasoline

	Ethanol	Methanol	CNG	Electricity
Near-Term Technical Acceptability	Proven	Proven	Satisfactory for some uses	Close to commercial
Economic Competitiveness (for energy output)	Much more expensive	Near equivalent	The same or better[a]	More expensive; wide range[b]
Availability	Limited	Limited; good future potential	Limited	Limited by generation constraints
Fuel Volume, Compared With Gasoline[d]	1.5x	2x	5x	2x - 3x[c]
Refueling Procedure	No different from gasoline	No different from gasoline	More complex and lengthy	Recharging takes hours; battery replacement cumbersome
Fuel Storage Container Weight[d]	1.3x	1.6x	100-140x (steel); 50-70x (aluminum)	Heavy; depends on technology
Fuel Storage Tank Cost[d]	Nominal	Nominal	$850-1,000	Battery type determines equivalence
Current State of Fuel System Technology Development	Production technology in Brazil	Pre-production stage	Commercial, but requires updating	Being used in niche markets
Representative Type of Vehicle	Light and heavy duty	Light and heavy duty	Niche fleets; light and heavy duty	Short range, light duty
Engine Performance Characteristics	Power gain, but less than methanol	Approximately 8% power gain[e]	Approximately 10% power loss	Comparable, at expense of range
Exhaust Emissions: HC, CO, NO_x and HC reactivity	Same or better; lower NO_x and HC reactivity	Same or better; lower NO_x & HC reactivity; potential for lower CO[g]	NO_x: same or higher HC: same or higher[f] CO: lower	Only emissions from generating plants (variable with facilities)
Energy Content (Net)				
Compared with about 18,500-19,000 BTU/1b for gasoline and diesel	11,500	8,600	21,300[f]	N.A.
Compared with 112,000-128,000 BTU/gal for gasoline and diesel	75,700	56,600	22,800[f]	N.A.

[a] Depends on vehicle operational characteristics and refueling costs, which are linked to the natural gas rates assigned to transport uses by regulatory bodies.

[b] Depends on battery technology and electricity costs (which have a wide range, based on variations in production technology and local regulation).

[c] Based on equivalent driving range.

[d] Twenty-gallon gasoline tank equivalent.

[e] Based on engines optimized to use gasoline (methanol optimization yields higher gains).

[f] Pure methane. Other minor constituents (such as ethane and propane) boil at higher temperatures.

[g] Under "lean-burn" conditions.

Source: DOE/PE-0080, p. 19.

NATURAL GAS STRATEGY STATEMENT

It shall be part of the strategy of the United States to promote the use of clean, efficient natural gas in residential, commercial, industrial, utility and transportation applications. Such use shall include the co-firing of natural gas with other fuels for efficiency or environmental purposes.

The United States shall promote and encourage domestic production of natural gas in an environmentally-sound manner by providing tax and tax accounting incentives to producers of natural gas. Further, the federal government shall complete price deregulation as existing contracts expire.

The Federal Energy Regulatory Commission shall expedite approval of pipeline construction serving new markets, particularly the oil-dependent residential market of the Northeast, and shall assure that all such projects provide access by interconnecting pipelines to producing areas of this nation.

The federal government shall fund continuing research and development relative to the environmentally-sound production and use of natural gas, in order to conserve energy by improving efficiency and shall promote development of methanol and natural gas-fueled vehicles.

RENEWABLE ENERGY

In terms of the long range energy goals of this nation, i.e. energy independence, alternative or renewable energy sources constitute a key energy option. Over the near term, commercial or near-commercial renewable energy technologies will continue to supplement conventional energy supply, offering diversification and relief from environmental pressures associated with fossil fuels.

Renewable energy resources are broadly defined as indigenous resources with relatively inexhaustible supply. Resources include solar energy, biomass energy (wood and other waste products), geothermal energy, hydropower, wind energy, and ocean energy sources. Renewable energy technologies are used to produce industrial applications, and liquid fuels for transportation. They range in technological status from fully commercial wood combustion, hydropower, wind and solar thermal facilities to research-oriented ocean energy experiments.

While fossil fuels are limited by finite supply, renewable energy sources are limited by comparative economics and conversion efficiencies. Progress in renewable energy technology development has continued throughout the period of low world oil prices and reduced federal support.

The U.S. Department of Energy has estimated that in excess of 80 quadrillion Btu's (quads) of renewable energy could be economically extracted within 25 years as a result of research, development and demonstration work. This would provide more than 70 percent of the nation's total energy consumption projected over this period.

Today renewable energy sources contribute over nine percent of the energy consumed in the U.S. Hydropower accounts for about 4 percent, while wood and wood/agricultural wastes contribute roughly 5 percent. All other renewable energy sources account for less than one percent of the U.S. energy consumption. Table 1 provides the current and additional renewable energy supplies expected to be available by the end of the century.

TABLE 1

RENEWABLE ENERGY CONTRIBUTION TO U.S. ENERGY SUPPLY: CURRENT, ADDITIONAL AND TOTALS PROJECTED FOR 1995-2000

In Quadrillion Btu's (Quads)

Source	Current	Additional	Totals Projected For 1995-2000
Wind	0.0174	0.01	0.03
Photovoltaics	0.0003	0.02	0.02
Biomass	3.80	4.20	8.00
Geothermal	0.1744	0.21	0.38
Hydropower	2.60	1.40	4.00
Solar thermal	0.0059	0.02	0.03
Active solar	0.017	0.08	0.10
Passive solar	0.0350	1.70	1.73

Source: Public Citizen, (Updated with U.S. Department of Energy and industry estimates.)

The most notable renewable energy contribution can be found in the electric utility sector. Table 2 illustrates renewable energy electric generating capacity in the U.S., listing the number of states involved. California is the most diversified state with nine different renewable energy resources under development.

TABLE 2

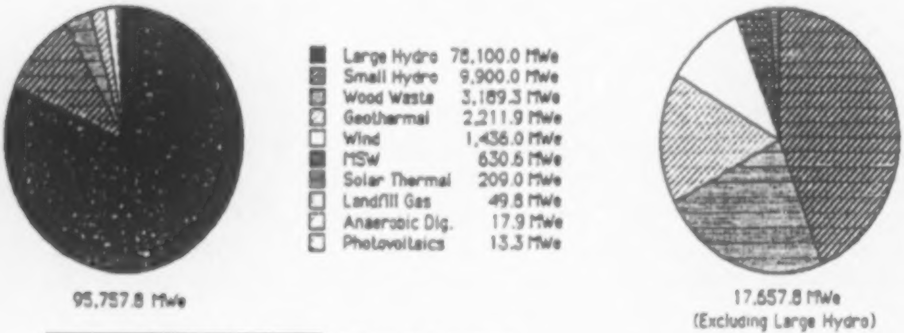
RENEWABLE ENERGY ELECTRIC GENERATION

Energy Source	No. of States	Generating Capacity(MWe)	% of Total
Large hydropower	37	78,100.0	83%
Small hydropower	46	9900.0	7
Wood/ag. waste	31	3189.3	4
Geothermal	4	2211.9	3
Wind	21	1436.0	2
Municipal solid waste	16	630.6	<1
Solar thermal	3	209.0	<1
Landfill gas	7	49.8	<1
Anaerobic digestion	6	17.9	<1
Photovoltaics	16	13.3	<1
TOTAL		82,186.2	

Source: U.S. Export Council for Renewable Energy (with updated industry estimates).

As Figure 1 indicates that large scale hydropower provides the bulk of the generating capacity. However, in addition to large hydropower, renewable energy electric generating capacity includes significant contributions from resources that have largely been developed in the past decade.

FIGURE 1
RENEWABLE ENERGY ELECTRIC GENERATION



Source: Council for Renewable Energy Education

Hydropower is a very well developed technology for generating electricity. It provides much of the electricity generated in the Pacific Northwest and other Western states; Tennessee, North and South Carolina in the South; and New York and Pennsylvania in the Northeast. In fact, more electricity is generated by hydropower in the U.S. than by oil or natural gas.

Most U.S. hydropower electricity generation is by large units sited at major dams. In addition, the U.S. Army Corps of Engineers (Corps) has estimated that up to 10,000 MW capacity exists for small scale, "low head" hydro. The number of small, privately-owned hydro facilities operating in the U.S. has grown during most of the 1980s, due in part to tax and regulatory incentives.

As of 1986, there were 579 privately-owned small hydroplants in the U.S. with a total capacity of 1,309 megawatts. Another 651 projects were licensed or under construction, representing an additional 1,056 megawatts.

U.S. hydroelectric power development, both large and small, has recently come under increasing regulation. Conducting highly site-specific environmental impact assessments and meeting conflicting jurisdictional requirements of federal and state agencies can significantly increase project costs and add several years to the time needed for a facility to be planned and built. Consequently, some small hydrodevelopers in the U.S. have built plants mostly at the sites of existing but non-operating dams, where questions about environmental impacts have been resolved.

Solar energy includes three main categories: solar thermal, photovoltaics, and solar for building applications. Solar thermal technologies concentrate sunlight for thermal or electric applications. Government-sponsored research has been conducted on central receiver, parabolic dish and parabolic trough systems. Of these, parabolic troughs have experienced the greatest commercial activity.

The most notable solar thermal contribution to U.S. energy supply is the Solar Electric Generating Systems (SEGS) developed and operated by California-based LUZ International. By the end of 1988, LUZ will be operating a total of 194 MW of parabolic trough systems and has contracts with the local utility to triple that capacity over the next 5 years. SEGS successfully supplements solar energy with natural gas to provide a close match with peak electricity demand in southern California.

Solar thermal is being used commercially in a number of industrial process heat applications such as metal plating, and copper foil manufacturing. Concentrated high temperature solar thermal processes also hold potential for the destruction of toxic wastes (e.g., dioxins and chlorofluorocarbons).

Photovoltaics (PV) covert sunlight directly to electricity. Photovoltaic systems range in size from power sources for hand-held calculators to multi-megawatt installations employing concentrators and solar tracking systems. While the domestic market for photovoltaics has grown slowly, the market in developing countries has emerged much more rapidly. U.S. photovoltaic products are used to provide power in remote locations for health, communication and small domestic applications.

Although 16 states have developed photovoltaic projects, the principal activities have been in California, Arizona and Texas. Electric utilities have shown increasing interest in photovoltaics. In 1987, a consortium of utilities created PVUSA (photovoltaic utility scale applications) to investigate the operation of utility-owned photovoltaic installations.

Passive solar systems employ building designs to directly tap or regulate the sun's rays for heating, cooling or lighting. These designs can be incorporated into both new and existing residential, commercial and office buildings. A well-designed passive solar home can reduce energy bills by 75 percent. Added construction costs ranges from 5 to 10 percent.

Active solar systems are used primarily for domestic water heating. As of 1987, there were an estimated 800,000 water heating systems and 100,000 active space heating systems in use in the U.S. The majority of active solar installations are in Southern and Western states, most notably California, Arizona, Florida, and Hawaii.

Biomass energy involves the conversion of organic feedstocks into useful forms of energy such as heat (thermal energy), electricity, or liquid fuels for transportation. Wood and wood waste account for 90 percent of the total biomass energy produced. Lumber companies and pulp and paper companies are the greatest users of biomass energy, meeting more than 65 percent of their energy needs with biomass.[1] Fuelwood provides about 10 percent of the energy used in households; 5.6 million homes are heated exclusively with fuelwood and 21 million homes are heated partially with wood.

Pressures on refuse landfills has increased the attractiveness of municipal solid waste (MSW) as an energy source. The U.S. Department of Energy estimates that about 80 percent of the 160 million tons of MSW produced each year in the U.S. is combustible, with an energy equivalent of 1.2 Quads. An additional 0.3 Quads could be extracted from the methane produced by the decomposition of wastes at existing landfills. Direct combustion of MSW has raised concerns over the dioxin, lead and cadmium found in the resultant ash, issues that must be addressed before this technology can reach its full potential.

Domestic fuel ethanol production capacity has increased from 180 million gallons of anhydrous (99.9 percent pure) ethanol in 1980 to 1,364 million gallons in 1988. During that same time, ethanol sales to the transportation sector have increased from 80 million gallons to an estimated 824 million gallons.[2] There are over 100 ethanol production facilities operating in 32 states.

In 1987, ethanol-gasoline blends accounted for 8 percent of the total motor fuel used and the ethanol in these fuels reduced oil consumption by 29.8 million barrels. It is likely than ethanol will be increasingly used to replace lead as an octane enhancer to meet EPA lead reduction standards in gasoline.

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[1] National Wood Energy Association

[2] Information Resources, Inc.

The Department of Energy Biofuels Program includes regional biomass centers, providing technical assistance corresponding to the geographic diversity of biomass energy needs. Western Area Power Authority maintains the Western regional program and Tennessee Valley Authority, the Southeastern program.

The primary use of wind energy in the U.S. is for the production of electricity. Wind turbines are often developed as "wind farms". Although wind is used to generate electricity in 21 states, fully 94 percent of the U.S. wind generation is in California. Other favorable wind regimes are found in the Rocky and Appalachian Mountain states, Northern Plains states, Alaska and Hawaii.

Over 16,000 wind turbines have been installed in California by the end of 1987, with a total generating capacity of 1,300 megawatts. California wind farms generated 1.7 billion kilowatt-hours of electricity in 1987, with an energy equivalent of approximately 2.6 million barrels of oil.[3]

Installed costs of wind turbines have dropped from $3,000 per kilowatt in 1981 to $900 per kilowatt in 1987. This is due, in part, to the introduction of foreign subsidized wind turbine sales. In 1987, imports of foreign wind machines accounted for 58 percent of the U.S. market.

Geothermal energy converts the earth's natural heat to useful forms of energy. Concentrated in the Western U.S., geothermal electric generating capacity reached 2211.85 megawatts by mid-1988.[4] The Geysers in northern California account for 1918 megawatts, or 86 percent of the nation's total.

Direct use of geothermal energy development include space conditioning of buildings, district heating, groundwater heat pumps, greenhouse heating, industrial processing, aquaculture, and swimming pool heating. Forty-four states have experienced geothermal direct use development in the last ten years. The total installed capacity is 5.7 billion Btu/hr., with an annual energy capacity of 17,000 billion Btu/yr. (4.5 million barrels of oil energy equivalent).[5]

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[3] American Wind Energy Association.

[4] DiPippo.

[5] Geo-Heat Center.

Ocean thermal energy conversion can be utilized to generate electricity by exploiting ocean temperature gradients between surface to deep waters. This process is called Ocean Thermal Energy Conversion (OTEC). It holds promise for island areas and the Gulf of Mexico. Not surprisingly, U.S. OTEC projects to date have been demonstrated off the coast of Hawaii.

Ocean thermal energy provides additional benefits when considered as an energy system. Desalination processes may be integrated into OTEC technology. Also, the colder water brought from the deep ocean is free of micro-organisms and rich in nutrients making it an attractive resource for aquaculture projects.[6] Ocean energy is also available in the form of wave energy and tidal power. Table 3 summarizes major renewable energy sources with end-uses.

TABLE 3

MATCHING UP MAJOR RENEWABLE ENERGY SOURCES WITH END-USES

RESOURCE	TECHNOLOGY	ENERGY TYPE
Hydro	Hydropower	Electricity
Solar Radiation	Buildings: Active, Passive	Heating, Lighting, Cooling
	Solar Thermal: Central Receiver, Dishes, Trough	Electricity, Heat
	Photovoltaics: Thin Film, Crystalline Multi-Junction, Concentrators	Electricity
Biomass	Direct Combustion, Biochemical Thermochemical	Heat, Electricity, Fuels
Wind	Horizontal, and Vertical Axis Turbines	Electricity
Ocean	Ocean Thermal Energy Conversion (Open Cycle)	Electricity
Geothermal	Direct Dry Steam, Single- And Multi-State Flash Binary Hybrid Binary	Electricity, Heat Gaseous Fuels

Source: From U.S. DOE/S - 0057, p. 199

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[6] Takahashi, p. 2.

Various lists of renewable energy sources often include technologies that may make renewable energy resources more efficient and, therefore, cost effective. Cogeneration, energy storage systems (e.g. batteries, molten salt), and superconductivity are all frequently mentioned. These technologies would also help integrate renewable energy systems into present, "conventional" energy systems.

Renewable energy captured the imagination of the U.S. after the oil crisis of the mid-1970s. Touted as a group of resources that would help wean America off oil, government support for renewable energy was largely abandoned in the face of lower oil prices and the mounting federal deficit. Despite the inconsistent treatment under federal energy policy, renewable energy systems made remarkable strides in the past decade and a half.

Because of the broad range of renewable energy technologies, federal support requirements vary widely. Some technologies need basic research and development to make a renewable resource feasible, others need demonstration efforts, while some need commercialization incentives to promote market acceptance.

The renewable energy research commitment since the late 1970s has contributed to great efficiency and cost improvements. DOE cites the reduction, over 10 years, of the cost of photovoltaics from more than $600 per peak watt to less than $5 per peak watt, with doubled efficiencies. Likewise the cost of ethanol processes have been reduced from $4 per gallon to less than $1.50 per gallon.[7]

Wind energy cost have dropped from $3000 to $900 per installed kilowatt. Solar thermal generated electricity costs have fallen from 45 cents/kilowatt-hour for a demonstration central receiver plant in 1978 (Solar One) to less than 12 cents/kwh for The LUZ Solar Electric Generation Systems (SEGS IV and V), a commercial parabolic trough system installed in 1988.

However, during the 1980s, concern about the federal budget deficit and a change in DOE's research and development policies led to a dramatic decline in federal research and development funding. The DOE's policy has restricted federal funding to long-term, high risk areas, cutting or removing support for demonstration and commercialization projects. Consequently, renewable energy received substantially less federal support in 1988 than it had in the mid-1970s.

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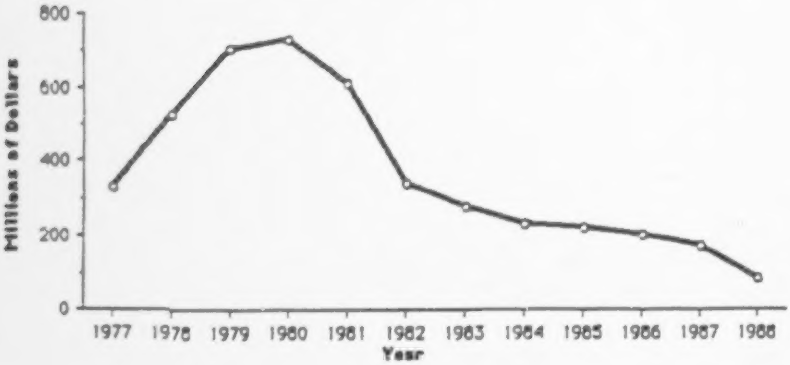
[7] Martin, p. 4.

Figure 2 illustrates federal research and development commitments to renewable energy from 1976 to 1988. The federal budget for renewable energy research and development has fallen 87 percent since 1960.

FIGURE 2

TOTAL FEDERAL RENEWABLE ENERGY BUDGET
1977 - 1988



Source: Potter, p. 180.

Other events have hindered development of renewable energy as well. Most notably, low world oil prices have made alternatives less attractive economically. In addition to directly affecting the market for ethanol fuel, low oil prices have dissipated consumer interest in solar and other technologies. Finally, the low price of oil has affected the price utilities are willing to pay for renewable energy generated electricity.

In 1978, Congress passed the Public Utility Regulatory Policies Act (PURPA), as part of the National Energy Act. It provided that utilities must interconnect with independent cogenerators and small power production facilities. PURPA required utilities to buy surplus electricity from the cogenerators and small power producers at the utility's marginal or avoided cost and to sell the facilities back-up power.

PURPA has been a very important legislative incentive for renewable energy small power facilities. However, the low price of oil, which in turn influences the price of other fossil fuels, has kept utilities' avoided costs down as well, reducing the price paid to independent renewable energy projects.

Renewable energy received another set back in the Tax Reform Act of 1986 which phased out all renewable energy tax credits by December 31, 1988. Solar, geothermal, ocean thermal and biomass energy investments had all been subject to investment tax credits ranging from 10 to 15 percent. Wind energy investment tax credits and residential solar tax credits, which had originally been enacted in the National Energy Act of 1978, were not extended in the Tax Reform Act.

One positive development for renewable energy in the 1980s was formation of the Committee on Renewable Energy Commerce and Trade (CORECT). An interagency committee including the Departments of State, Commerce, Energy, Defense, the Agency for International Development, the U.S. Trade representative and others, was formed as part of the Renewable Energy Industry Development Act of 1983. The purpose of CORECT is to facilitate exports of U.S. renewable energy equipment. CORECT plays an important role in assisting small renewable energy firms and in coordinating the development efforts of various government agencies.

In the mid-1980s the American share of the world photovoltaic market fell, in three years time, to less than 50 percent. Other nations are vigorously pursuing technological research, development, demonstration and commercialization strategies in photovoltaics and other alternative energy areas. Although nations like Japan and those in Europe build on U.S. technology, American researchers and entrepreneurs are limited by language and information distribution constraints from benefitting from foreign advancements.

Current federal support for renewable energy is insufficient to allow renewable resources to reach their potential in the long term. As the Congressional Office of Technology Assessment points out, the low price of oil has provided the nation with a window of opportunity to bring these technologies to the market place. The nation has benefitted from low oil prices, "buying" time for development of renewable energy, a luxury that would disappear with another world oil crisis.[8]

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[8] Blair, p. 2.

The government's goal of lessening dependence on imported oil and relieving environmental pressures cannot be assumed to be the concerns of the private sector. Those concerns, basic to development of renewable energy, are national ones.

RENEWABLE ENERGY STRATEGY STATEMENT

Renewable energy sources are characterized by a broad range of technologies, costs, efficiencies and environmental concerns. Recognizing this spectrum of resources, it shall be the strategy of the U. S. to institute a long range, stable Renewable Energy Development Program which identifies and assists renewable energy sources from research and development through demonstration projects and commercialization in a cooperative effort among industry, higher education and national laboratories.

Renewable energy resource development must be ranked and funded on the basis of factors including energy efficiency, economic competitiveness, environmental impacts and technological adaptability. Part of this program, and critical to its success, is federal development of alternative technologies that improve renewable energy efficiencies, cut costs and assist in integrating renewable energy into existing energy systems. Also needed is a translation and distribution system for international technical and marketing papers on renewable energy.

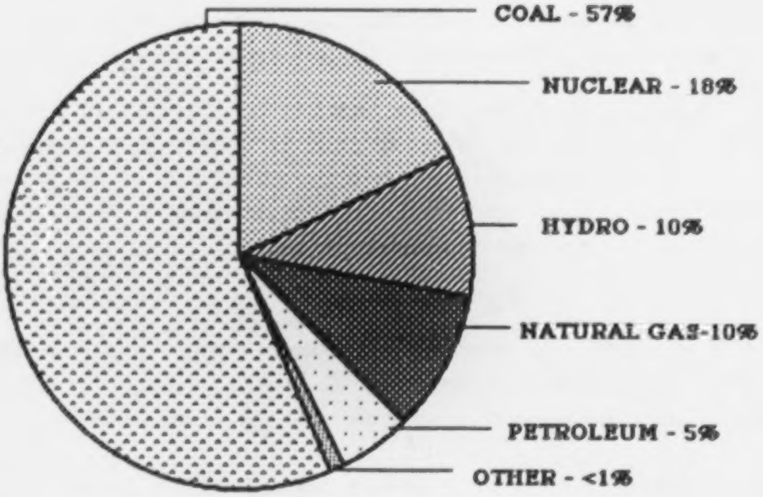
ELECTRICITY

There are three phases to the U.S. electricity industry: generation, transmission and distribution. Traditionally, electric utilities have been integrated and involved in all three phases of the industry. However, transmission and distribution functions may be separated from generation in some cases.

Electricity generation in the U.S. is quite diversified. Powerplants are fueled by coal, nuclear, hydropower, natural gas, petroleum and other energy sources. However, coal fired more utility powerplants in 1987 than all other fuels combined. Figure 1 shows U.S. electric generation by utilities by fuel source for 1987.

FIGURE 1

1987 ELECTRICITY GENERATION BY UTILITIES BY FUEL SOURCE



Source: South/West Energy Council From DOE-EIA - 0348 (87) p. 13.

Not surprisingly, coal is the most important generating fuel to states in the Eastern coal belt -- Ohio, Pennsylvania, West Virginia and Indiana. Texas also uses a lot of coal, much of it lignite mined in the state. There are 108 nuclear units in the U.S. and more than fifty percent of the electricity in New Jersey, Connecticut, South Carolina, Maine and Vermont is supplied by nuclear powerplants.

Hydropower is a significant source of generation on the West Coast (Washington, Oregon and California) as well as in New York State and Arizona. Over 85 percent of the natural gas used for electricity generation is burned in Texas, California, Louisiana, Oklahoma and Florida.

Petroleum is a significant source of power generation for areas of New England (Massachusetts and Connecticut), certain Middle Atlantic states (New York and Pennsylvania) and Florida. Almost 90 percent of U.S. generation from "other fuels" (including geothermal, wood, waste and solar) is located in California.

A utility has a responsibility to provide reliable power. Thus it must stand ready to supply the peak power requirements of its customers. This means having enough power available to meet the highest demand level, or the "peak demand," of the year.

Unlike other forms of energy or fuel, electricity cannot be stored. Consequently, it must be produced as needed. "Baseload" plants run continuously to meet average electricity needs. However, daily peak demands on a utility system may be met by "peaking" plants. Such plants are often more expensive to run and smaller than baseload plants but their electricity production levels may be increased quickly to meet rising demand.

Utilities employ computerized economic dispatch programs which constantly monitor electric power demand on the system. The dispatch program calls up additional generation on the basis of plant efficiency, power economics and transmission limitations.

Capacity to produce electricity beyond that required in peak usage periods is called the reserve margin. Reserve margins of 15 to 25 percent are considered an industry norm. Reserve margins cover contingencies such as having a generating unit down for emergency repairs during a peak demand period.

Peak demand varies by consumption sector. Cost of service also varies by sector. Residential consumers have well-defined daily and seasonal peaking patterns. Daily peaks occur in the late afternoon when consumers come home from work, watch the news and prepare supper.

The second distinguishing characteristic of residential consumers is the high cost of service per consumer. The peaking nature of residential demand is expensive since it requires additional generation units for brief periods of excessive demand. Also, residentials are expensive to serve since each unit must be connected, metered and billed separately.

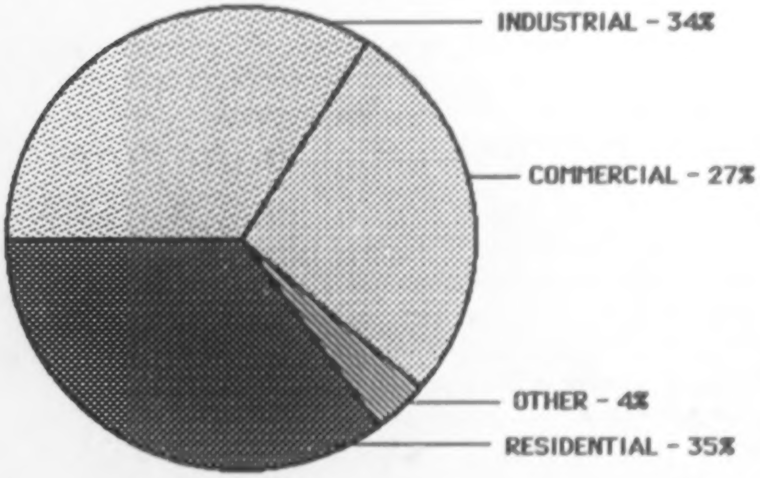
Industrial consumers represent a relatively constant load (demand) for electricity since many industrial processes run continuously, 24 hours a day, 365 days a year. Many industrials use large amounts of electric power at high voltage levels. They require a limited number of connections to the system and often represent a single or limited number of metering and billing operations. All these factors make industry less expensive, on a per kilowatt/hour basis, for an electric utility to supply.

The third consumer group is the commercial sector which includes businesses, hospitals, schools, government buildings and such large electricity consumers as shopping malls. Although system reliability is obviously critical to institutional consumers like hospitals, it is becoming increasingly important to the business sector in general. The pervasive integration of electronic data processing and computers into office operations underscores the need for a reliable supply of electricity.

Electricity consumption by sector for 1987 is illustrated in Figure 2. The "other" category is defined by DOE as including street lighting and sales to public authorities, railroads and interdepartmental sales by utilities.

FIGURE 2

1987 ELECTRICITY CONSUMPTION BY SECTOR



Source: South/West Energy Council From DOE-EIA - 0348 (87).

Transmission systems tie the source of electric power, the generation sector, to the consuming sector. The transmission systems of individual companies are usually linked together at points called interconnects. The transmission systems of a region may be connected in a "pool". This permits companies to buy and sell power to assure reliability and economy, as well as to share power in emergency situations.

Distribution systems "deliver" electricity to consumers. There are three main types of utilities providing generation, transmission and distribution services in the U.S. today. They are investor-owned utilities serving over three-quarters of the consumers; municipally-owned utilities serving 13 percent; and the electric co-operatives, known as co-ops, serving 11 percent of the nation's consumers. Additionally, there are federal power authorities like the Tennessee Valley Authority, Bonneville Power Authority and others which sell wholesale power to utilities for distribution.

Utilities are generally either publicly regulated or publicly-owned. Regulation at the federal level is by the Federal Energy Regulatory Commission (FERC). FERC's authority extends to all sales for resale, whether intrastate or interstate, and all transmission transactions except most in the state of Texas.

State regulation usually includes the regulation of most or all retail sales to consumers of electricity. Much of state regulation is related to the monopolistic status granted the utility by the state.

The traditional regulatory compact grants utilities a geographical service franchise in exchange for meeting the obligation to provide service on reasonable terms to all those who request it. Further, earnings are limited on opportunity to earn a "fair" return on invested capital, as set by the regulatory body.

Most states have utility regulatory bodies, commonly called public utility commissions (PUCs) or public service commissions (PSCs). Their members may be elected by the public or appointed by the governor. State PUCs or PSCs normally regulate rate schedules, security offerings and certain contractual relationships, as well as other matters, under state statutory or constitutional grants of authority.

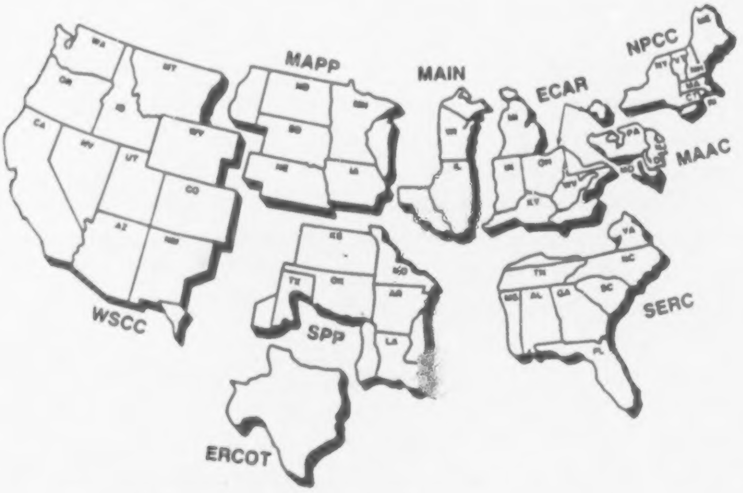
In some cases such authority may be withheld in favor of local government regulation. Local regulation normally takes one of two forms; the granting of franchises to locate distribution facilities (poles and wires) on public right-of-ways, and the regulation (or actual operation) of a municipal utility.

In retrospect, the period from the close of World War II to the mid-1970s was a golden one for electric utilities in the United States. Technological improvements meant declining costs while demand grew steadily at rates as high as 10 percent per year.

One exception to this generally trouble-free era was the so-called "New York City Black-Out" which occurred in November, 1965 and plunged 30 million people on the Eastern seaboard into darkness. That incident lead to the formation of the National Electric Reliability Council, composed of 10 Regional Reliability Councils as illustrated in Figure 3. Interconnects and pooling arrangements within the regional reliability councils improved system reliability and the ability to make bulk (wholesale) power sales between utilities.

FIGURE 3

NORTH AMERICAN ELECTRIC RELIABILITY COUNCIL REGION MAP



Regional Electric Reliability Council Areas

ECAR—East Central Area Reliability Coordination Agreement
MAIN—Mid-American Interpool Network
MAAC—Mid-Atlantic Area Council
MAPP—Mid-Continent Area Power Pool
NPCC—Northeast Power Coordinating Council
SERC—Southeastern Electric Reliability Council
SPP—Southwest Power Pool
ERCOT—Electric Reliability Council of Texas
WSCC—Western Systems Coordinating Council

Source: DOE-EIA, Electric Power Annual, 1986

The post-war period of utility growth and prosperity came to an end in the 1970s. Foreign oil embargoes caused energy costs to rise in an unprecedented manner. Since fuel costs average 50 percent of a utility's operating and maintenance costs, PUCs allowed automatic fuel adjustments to consumer's bills.

Secondly, utility construction programs, based on previous demand growth rates, ran into cost-of-capital problems with high inflation. Many of these new construction projects were large nuclear plants.

Construction schedules were disrupted when regulatory agencies responded to the Three Mile Island Nuclear Plant accident with revised safety requirements. Further, nuclear plants were built on an unprecedented scale and often ran into construction problems and delays because of unforeseen technical difficulties. Finally, organized legal challenges slowed many projects significantly.

In the political arena, the oil embargoes of the seventies provided the impetus for the National Energy Act (NEA) which included the Fuel Use Act (FUA) and the Public Utility Regulatory Policies Act (PURPA). In an effort to temper U.S. dependence on what was perceived to be limited domestic oil and natural gas resources, the FUA prohibited the construction of new oil and gas utility powerplants and industrial boilers. Those prohibitions were removed in 1988, but by that time a number of coal-fired generating units had been built in lieu of natural gas plants.

PURPA attempted to conserve energy by encouraging small alternative fuel generation and cogeneration units. Cogeneration, practiced by industry since early this century, is the simultaneous generation of electric power and heat for industrial processes. PURPA directed that utilities must buy power if offered for sale by small power producers and cogenerators at rates no higher than the purchasing utility's avoided cost.

During the upheaval of the late seventies and early eighties, the public became politicized as utility rates climbed with higher fuel costs and plant construction overruns. Unfortunately, during this same period, demand growth which had averaged 10 percent per year, dropped precipitously and settled at an annual rate of two to five percent.

Once under construction, large-scale power generation stations afforded utilities little flexibility in completion or financing (e.g. utilities were faced with completing plants no longer needed or abandoning their sunk investments). Prudence reviews, alternatively viewed as witch hunts or management accountability tools, were conducted by PUCs facing rate increase requests from cash-strapped utilities.

Largely on the basis of completion or abandonment of major generating projects during this decade, generating capacity varies greatly from region to region in the U. S. Some regions, like the Northeast, experienced brown-outs (power reductions) during the summer of 1988. In other areas, where large generating units came on line at roughly the same time demand slacked off, reserve margins may exceed 50 percent.

Regions with excess capacity have been particularly affected by the requirement to purchase PURPA power, which has been enforced even though additional capacity was clearly not needed. This means further increases to utility bills which had recently been increased to pay for new generating capacity.

Regional regulation, in light of the regional nature of electricity markets, has been suggested by policy makers like the National Governors Association. Such efforts have proved unsuccessful largely because of a fear of adding another regulatory layer to an already complex regulatory system.

Improved interconnects and transmission technology, as well as regional capacity differences, have led to tremendous growth in bulk power sales between utilities. Other bulk power sales have come from independent power producers and Canadian imports. Increases in long term contract sales, spot power exchanges, contract power pooling, shared facility ownership, and economic dispatch are all related, at least in part, to the growth in the bulk power market.

Canadian electricity imports, primarily generated by Canada's vast hydro-resources, provide up to 10 percent of New York's and New England's electricity consumption. Proponents of Canadian electricity imports point to cheaper rates for U.S. consumers, a reduction of air pollutants by backing out coal-powered generation and a decrease in imported oil for generation. Opponents cite increased trade deficits and question reliability, dependence on foreign power, and subsidies granted Canadian utilities by that government.

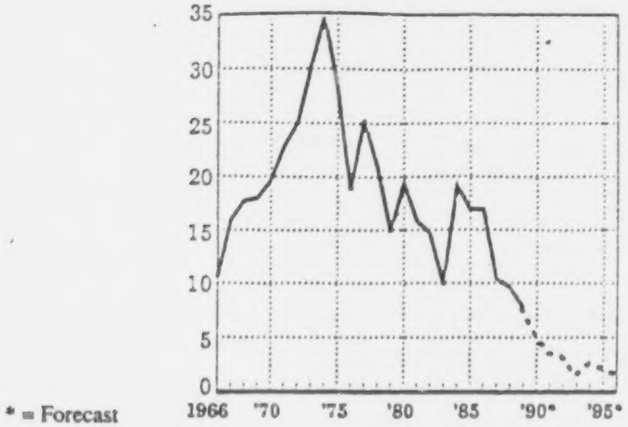
Additions to utility capacity have definitely decreased from their peak in the early 1970s. Figure 4 shows capacity additions made and planned.

FIGURE 4

ELECTRIC GENERATING CAPACITY ADDITIONS BY U.S. UTILITIES

MADE AND PLANNED, 1966 - 1996

(Thousands of Megawatts)



Source: Wall Street Journal from Utility Data Institute

Finally, the residential electricity consumer movement, born of the rate battles waged earlier this decade, is promoting "least-cost alternatives" to new generating construction. Least-cost planning is recommended by its advocates as a process to assure that electric utilities meet future load growth with reliable and adequate energy services by employing demand management, as well as supply-side options.

Least cost proponents want a voice in the utility's planning process. They say that if state PUCs and public advocates become involved in front-end "management decisions" relative to new generation, they will share responsibility for the decision with the utility after the powerplant is built.

One least-cost approach, called integrated resource planning,[1] has been outlined for PUCs. It would consider a number of factors including utility protection from prudence reviews, standardized means of evaluating demand-side programs, expensing of utility conservation program costs and a review of automatic adjustment rates to account for lost revenues associated with conservation programs. Integrated resource planning would also require the development of appropriate funding and staffing levels at state PUCs to properly review utility plans.

Ordered to buy PURPA power and able to buy bulk power, many utilities are looking at new generation construction long and hard. Powerplant conversion (e.g. conversion of incomplete nuclear plants to natural gas) and refurbishing existing powerplants also look less risky than construction. However, all these alternatives raise questions of system reliability.

Regardless of who builds the next generation of power stations, environmental factors will play a significant role in the type of facility selected. The so-called "greenhouse effect" may impact future power production decisions in two regards. First, it may influence the choice of fuel and secondly, an increase in the earth's temperature might increase electric utility capacity needs.

Coal and fossil fuel combustion has also been linked to acid rain. Regional differences arise when utility generators using "compliance coal" (low sulfur coal), low sulfur oil, natural gas or nuclear power are threatened with paying for the clean up of older, high sulfur coal facilities. Many recent coal-burning utilities, forced off of indigenous oil and gas by the FUA, built more expensive compliance coal generation units. Such utilities fear double jeopardy now with regard to the cost of cleaning up acid rain problems.

Although there are over a hundred nuclear generating plants in this country, it is unlikely that new plants will be considered until matters of licensing reform, uniform design and disposal of spent nuclear fuel are settled. Regulation of nuclear plant construction has been greatly simplified by European nations relying on an approved, standardized plant design.

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[1] Hurst.

Another nuclear concern relates to the disposal of spent nuclear powerplant fuel, presently being stored on the plant site. Finalization of federal policy regulating disposal of spent fuel is a pressing energy policy need.

Industries, seeking to buy power from generators other than the franchised utility, have long sought wheeling (transmission) privileges in the name of economy and efficiency. Utilities generally oppose wheeling on the grounds that transmission systems, designed to handle power generated by the utility, are unable to move specific blocks of power from point to point but rather must be balanced systematically and could become overloaded with wheeling demands. Further, according to utilities, wheeling-off system power to the utility's industrial consumers would mean a loss of baseload consumption, and consequently, higher rates to the utility's remaining customers.

Utilities feel beleaguered by increasing competition from PURPA power generators, pressure to wheel from industrials, regional capacity problems which pit utilities against one another (under excess or shortage conditions), and least-cost planning processes enforced by state PUCs. They voice grave concerns over the status of their service obligation, loss of control of transmission systems and system failure due to unreliable generation.

It is in this environment that FERC has issued Notices of Proposed Rulemaking (NOPRs) which in the words of electricity industry analysts, "Could change forever both the structure of the utility industry and the regulatory framework within which it operates."[2]

In an effort to reform electric power regulation, FERC's notices label traditional cost-based regulation as flawed because it provides insufficient incentives to utilities to minimize costs to consumers. FERC also feels that the present regulatory scheme holds utilities accountable for failures, but fails to reward utility successes proportionately. As a result, utilities may minimize capital expenditures. This may also result in a bias toward less fuel diversity and a reduction in technological innovation.

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[2] Smartt.

Citing the terms of PURPA, the first phase of FERC's efforts are to target near term decisions in meeting new capacity needs. Subsequent phases of reform regulation will focus on pricing for bulk power markets, utility wholesale sales and transmission.

The current NOPRs, issued in March, 1988, clarify federal rules relative to state PUC administrative determinations of "full avoided cost" for PURPA power purchased by utilities. They also eliminate unnecessary capacity purchases. The second part of the NOPRs provides for a bidding program as an alternative to administrative determinations of full avoided cost. Coincidentally, PUCs in states like New York are pursuing bidding programs as well.

The third set of NOPRs establishes a framework free of regulation for Independent Power Producers (IPPs) who do not qualify for benefits under PURPA and also do not have market power sufficient to fix or maintain prices. Utilities charge that this NOPR would create an unregulated class of generators with an unfair competitive advantage. This proposal will no doubt be challenged in court as exceeding FERC's authority under the Federal Power Act and PURPA.

Although FERC's policy changes may be considered dramatic, the NOPRs are no match for the excitement generated by physicists pursuing superconductivity as the subject of private, as well as public, research efforts. Fully 25 percent of the primary energy consumed in the United States is attributable to electricity generation and transmission losses; superconductivity has the potential to greatly reduce those losses and provide storage technology to levelize electricity demand peaks.

Although now largely limited to the laboratory, concerted research on superconductivity may be expected to impact power generation, transmission and storage, shortly after the turn of the century. Other energy, or specifically, electricity storage systems, are also under development. The potential for electricity conservation is tremendous.

ELECTRICITY STRATEGY STATEMENT

It shall be the strategy of the United States to promote the development of sources of electric energy that are sufficient to meet national needs, secure from external threat, reliable in availability and delivery, safe relative to people and the environment and efficient for use in homes, businesses and industries.

The electricity sector today is marked by tremendous regional diversity, especially with regard to capacity. Fuel usage also varies widely. Implementation of federal legislation that fails to recognize this diversity inevitably penalizes one region or another.

State regulatory bodies are close to consumers, utilities, industries, and concerned for state economic well-being. State regulatory bodies are in the best position to evaluate consumer needs, questions relative to fuel choice, economic development implications, and system reliability.

A federal government program for storage and disposal of spent nuclear fuel shall be finalized as quickly as is safely possible. Federally-acceptable, standardized nuclear powerplant designs must also be established.

Electricity research and development efforts shall be intensified with regard to energy efficiency, superconductivity, advanced and reasonable environmental controls in power generation, and development of cost-effective renewable supply technologies. The development of electric vehicles shall also be pursued.

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